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RHYNCHOSPORA, SECTION EURHYNCHOSPORA, IN CANADA, THE UNITED STATES AND THE WEST INDIES

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(Plates 818–835)

IN 1806 Vahl² segregated the genus *Rhynchospora* from *Schoenus* as the latter had been defined in the inclusive sense of Linnaeus. Vahl's brief diagnosis, with its emphasis upon the indurated, persistent style, was followed by descriptions of nineteen species. Of these original species nine are now recognized members of the Section *Eurhynchospora*. *R. inexpansa*, *R. fascicularis*, *R. distans* (*R. fascicularis* var. *distans* (Michx.) Chapm.), *R. capitellata*, *R. sparsa* (*R. miliacea* (Lam.) Gray) and *R. ciliata* (*R. ciliaris* (Michx.) Mohr) had been previously described under *Schoenus* by Michaux;³ *R. glomerata* and *R. alba* under *Schoenus* by Linnaeus;⁴ and *R. glauca* was only a new name given by Vahl to his own previously described *Schoenus rugosus*.⁵ *R. fusca* (L.) Ait. f. was also included by Vahl as *R. alba* β *fusca*. Of these species *R. alba* has been selected to typify the genus.⁶

¹ Now Mrs. Chester E. Cross.

² Enum. ii. 229 (1806).

³ Fl. Bor.-Am. i. 35–37 (1803).

⁴ Sp. Pl. 44 (1753).

⁵ Vahl, Eclog. Am. ii. 5 (1798).

⁶ M. L. Green, Standard-Species Nom. Conserv. no. 492 (1926), mimeographed.

In 1816 Elliott published the first pages of his Sketch of the Botany of South Carolina and Georgia. Here he described three new species of *Rhynchospora*, *R. plumosa*, *R. punctata*, *R. caduca*, and, under *Scirpus*, a fourth, *R. schoenoides* (Ell.) Wood. He also made the new combination, *R. rariflora*, from Michaux's *Schoenus rariflorus*.

Unfortunately nothing but confusion has resulted from Muhlenberg's treatment of the genus. He attempted to reinstate *Schoenus* as inclusive of *Cladium* and *Rhynchospora*. Although several new species were listed in the first edition of his Catalogue¹ in 1813, they were not validated until the publication of his Descriptio Uberior Graminum² four years later. The names of his new species *S. ciliaris*, *S. capitatus*, *S. cymosus* and *S. setaceus* were later homonyms under *Schoenus*, nor are they available for use under *Rhynchospora*. Finally, he frequently neglected to give any indication of the authorship of his species.

Asa Gray's³ early monograph of North American *Rhynchospora* is the first treatment of the genus to be done in the carefully documented, modern style; and it forms the basis for all later work on the genus as it is represented in Canada and the United States. Gray was able to verify, by means of fragments from the Michaux Herbarium, all of the Michaux species. He had the use of John Torrey's herbarium which contained among others, specimens collected by Elliott, Schweinitz, Ingalls and Curtis, as well as the herbarium of Baldwin. At the Philadelphia Academy of Natural Sciences he saw the Schweinitz herbarium and the Muhlenberg herbarium. Of the latter he remarks, "Specimens of many of these [Muhlenberg's species], however, do not exist in his herbarium; and those which have a place are in such a state of confusion, (there being often three or four species with a single label) that little information is to be obtained by consulting it." Gray wisely chose to base his treatment on the details of the achene; and, to aid in correct identification, a plate figuring the achene of each species was prepared. The descriptions are original, detailed, and accurate, and are accompanied by synonymy, the citation of specimens and careful dis-

¹ Ibid. 5 (1813).

² Ibid. 4 (1817).

³ Ann. Lyc. N. Y. iii. 191-220 (1835).

cussions. The exigencies of the primary division into "nuts rugose" and "nuts not rugose" forced the separation of *R. plumosa* from the closely related *R. oligantha*; but, in good part, the related species were placed together. There was, however, no attempt to separate the thirty recognized species into formal groups.¹ *R. Torreyana*, *R. microcarpa* Baldw. ex Gray, *R. Elliottii* (renamed *R. Grayii* by Kunth), *R. megalocarpa*, *R. Baldwinii*, *R. oligantha*, *R. gracilentata*, and *R. cephalantha* were the additions to the Section *Eurhynchospora*. The correct combination *R. miliacea* was made from Lamarck's *Schoenus miliaceus*, and given preference over *R. sparsa* (Michx.) Vahl. However, to *Scirpus schoenoides* of Elliott, Gray gave a new name, *R. multiflora*, rather than the correct combination which was later made by Wood.² *R. patula* Gray was a *nomen confusum* since it was applied to sheets of *R. microcarpa* and *R. caduca*. *R. dodecandra* Baldw. ex Gray and *R. pycnocarpa* were synonyms of *R. megalocarpa*, as was *R. semiplumosa* of *R. plumosa* Ell. *R. paniculata* is true *R. glomerata* (L.) Vahl and the species to which the latter name was applied by Gray is *R. capitellata* (Michx.) Vahl.

A year later in Torrey's North American Cyperaceae³ Gray reworked his treatment of *Rhynchospora*, segregating *R. oligantha*, *R. plumosa* and its synonym, *R. semiplumosa*, as 1, "*Eriochaete*" separated by the subglobose achene and plumose bristles; and 2, "*True Rhynchosporae*", including species with lenticular or compressed achenes. *R. macrostachya* and *R. corniculata* were transferred to the genus *Ceratoschoenus*. One new species, *R. filifolia* Gray, was described, and *R. pycnocarpa* was reduced to synonymy under *R. megalocarpa*.

In the year previous, Nees von Esenbeck⁴ published his *Synopsis Generum Cyperacearum*. This was a much needed attempt to give the diagnostic characters of the *Cyperaceae*, and, in some cases, of the principal subgeneric divisions. He limited the genus *Rhynchospora* to species with "spiculae polygamae. Stylus bifidus. Perigynium setosum, setis rigidis denticulatis.

¹ With the exception of a suggestion that *R. corniculata* and *R. macrostachya* might be referred to *Cephaloschoenus* Nees.

² Class-Book of Bot. 744 (1861).

³ Ann. Lyc. N. Y. iii. 362-372 (1836).

⁴ Linnaea ix. 282 (1835).

Caryopsis styli basi persistente discretaque latirostrata." Although this definition is practically identical with that now applied to the Section *Eurhynchospora*, it was followed by a list of species many of which belonged to other sections.

Kunth's *Enumeratio*, Volume ii, appeared in 1837. The forty-four species of *Rhynchospora* were divided into the *Capitatae*, *Longirostres* and *Communes*. Of these only the *Communes* are considered in this paper; but it is important to notice that, as in *Rhynchospora* sensu Nees, the group *Communes* had the "Stylus bifidus" and was, in part, a precursor of the Subgenus *Diplostylis*. Kunth's treatment of the species consisted of a careful review rather than the addition of new species. His descriptions, like those of Gray, drew particular attention to the achenes. His special contribution is his elaborate synonymy, to which I am indebted for the clue to the identity of *Schoenus cymosus* Willd. In the *Addenda* and *Corrigenda*, he gave to *R. Elliottii* Gray its present name, *R. Grayii*, on account of the earlier *R. Elliottii* of Dietrich.

The treatment in Steudel's *Cyperaceae*,¹ despite its inclusion of several new species, was less original than that of Kunth. Steudel's main divisions were geographical. Under "I. Species Americae septentrionalis" he placed Gray's *Eriochaete* and *Rhynchosporae verae* (latinizing the latter). Under "II. Species Americae australis" he had a vague key, emphasizing, in the primary divisions, plumose as contrasted with scabrous bristles; and, in the secondary divisions, the type of inflorescence. Many of Steudel's descriptions were condensed latinizations of Gray's descriptions, both from the *Monograph* and from the *North American Cyperaceae*. He even included a full description of *R. pycnocarpa* Gray, although he explained in a note that it had been reduced by its author to a synonym of *R. megalocarpa*. Of Steudel's new species, *R. longiseta*, *R. microseta* and *R. foliata* are unknown to me. *R. longiseta* and *R. microseta* are referred by the *Index Kewensis* to the synonymy of *R. caduca* Elliott and *R. ciliata* Vahl (*R. ciliaris* (Michx.) Mohr) respectively. *R. ? monostachya* Steud. is *Eleocharis tuberculosa*² and *R. etuberculata* is referred again by the *Index Kewensis* to *Scirpus leptolepis*.

¹ *Ibid.* 139 (1855).

² See SVENSON, RHODORA xxxix. 248 (1937).

Steudel also gave to *R. pallida* Curtis another name, *R. Curtisii*, thinking that *R. pallida* Nees, which had not previously been validly published, took precedence.

Grisebach¹ in 1857 set up the Section *Eurhynchospora* to contain species with "Setae elongatae. Stylus bifidus", and he typified it by *R. glauca* Vahl (*R. rugosa* (Vahl) Gale). This definition was later amplified in Part vi. of the Flora of the British West Indies² with the additional character "achaenium separated from the beak by a broad transverse joint." Of the species listed by him, I am excluding *R. cephalotes* Vahl from the section on the basis of its indurated scales and coarse, peculiar habit. *R. gracilis* Vahl is of uncertain identity, but Grisebach was probably using it in the sense of *R. globularis* (Chapm.) Small, var. *recognita* Gale and *R. rugosa* (formerly *R. glauca* Vahl).

Grisebach's chief contribution to the knowledge of this genus came with his work on the Wright collections from Cuba. *R. pruinosa* was described in Part II. of the *Plantae Wrightianae*³, but the bulk of the new species were published in the *Catalogus Plantarum Cubensium*.⁴ Here were added to the Series *Cernuae*, previously represented only by *R. pruinosa*, 4 additional species *R. Lindeniana*, *R. scabrata*, *R. tenuifolia* and *R. cernua*, although Grisebach mistakenly placed the last named species in a new section, *Microchaeta*. *R. odorata* Wright ex Griseb. was also included. *R. pennisetata*, however, is *R. plumosa* Gray; *R. deflexa* is *R. cubensis* Rich., and *R. setacea* sensu Grisebach, non Vahl, is *R. rariflora* (Michx.) Ell. *R. cephalotoides*, also included by Grisebach in the Section *Eurhynchospora*, is closely related to *R. cephalotes*. I have excluded both of these species from this section. Known from the mainland, but new to Cuba, was *R. miliacea*.

The work begun by Grisebach was continued by Wright, working in collaboration with Francesco Sauvalle. The portion of the *Flora Cubana*⁵ dealing with species of *Eurhynchospora* was published for the first time in 1871. Wright's new species *R.*

¹ Goetting. Abh. vii. 272 (p. 124 of repr.) (1857).

² Ibid. 573 (1864).

³ Ibid. 535 (1862).

⁴ Ibid. 242 (1866).

⁵ Anal. Acad. Ci. Habana, viii. 83 (1871).

leptorhyncha and *R. brachychaeta* were carefully described; others, already treated by Grisebach or earlier authors, were merely listed with the number of the Wright collection. The authentic specimens are at the Gray Herbarium, as are also duplicates of Grisebach's species, but special care has been necessary in their citation, for the sheets are badly scrambled; the same number has often been applied to specimens belonging to 2 or more species and the accompanying memoranda as to locality and habitat often cannot be oriented with certainty to one of possibly three specimens on a sheet.

In 1873 Otto Boeckeler published, under the title *Die Cyperaceen des Königlichen Herbarium zu Berlin*, a treatment of the Tribe *Rhynchosporae*. He described in all 136 species of *Rhynchospora*, several of which he derived from *Dichromena* as transfers. These were divided into two groups: A. *Capitatae*, B. *Corymbosae*. The *Eurhynchosporae* appeared with species of other sections under the latter heading. In this treatment most of the new species were Brazilian, but Boeckeler's descriptions of such North American species as *R. alba*, *R. caduca*, *R. plumosa*, etc. were original and among the best that have been written.

The designation *Dichostyleae* appeared in the summary of the genus by Bentham and Hooker.¹ It set off from the *Haplostyleae*, with apically bilobed styles, those species in which the styles were deeply cleft, forming slender stigmatic branches equal in length to the undivided portion of the style.

Prior to 1892 Gray's original treatment of species of the Coastal Plain had been augmented by scattered publications of other authors, notably Curtis, Carey, Boott, and more especially by Chapman's *Flora of the Southern States*. In that year, however, Britton² published a list of North American *Rhynchospora*. This list covered the Mexican species, but excluded those from the West Indies. It gave little information outside of the few characters employed in a rudimentary key to the groups of species. Its principal emphasis was placed on the synonymy, which was frequently incorrect, and statements as to the range of the species. Britton had been supplied by Clarke with an abstract of the latter's arrangement of the North American

¹ *Gen. Pl.* iii. 1060 (1883).

² *Trans. N. Y. Acad. Sci.* xi. 83-93-repr. 10-19 (1892).

species, and the *Eurhynchosporae*, as well as some species of other sections, were placed under the "Subgenus *Eurhynchospora* Clarke." *R. alba* var. *macra* Clarke, *R. glomerata* var. *discutiens* Clarke, and *R. fuscoides* Clarke were new; and were apparently taken from the abstract referred to in the introductory note. *R. fuscoides* was here without description but was validly published two years later in Clarke's treatment of the *Cyperaceae* for Urban. *R. glomerata* var. *minor* (*R. capitellata* (Michx.) Vahl) and *R. axillaris* var. *microcephala* (*R. microcephala* Britt. ex Small) were additions by Britton himself. *R. compressa* Chapm. was reduced to a variety under *R. cymosa* (*R. globularis* var. *recognita* Gale).

C. B. Clarke wrote the treatment of the *Cyperaceae* for Urban's *Symbolae Antillanae*, Volume II. With the fifty-five species of *Rhynchospora* appears the first key to species. Presumably it is, in part, a natural key, since series and sections are directly assigned to its main divisions. Its chief faults are those of brevity and too great a reliance on measurements. There is no mention of a subgenus, or even of a section *Eurhynchospora*.

Species of that section, as it is here interpreted, occur under the heading of Series B. *Diplostyleae*, and are classified as Section 2, *Plumosae*, Section 3, *Albae*, Section 4, *Fuscae*, and Section 5, *Glaucæ*. Section *Plumosae* includes, in addition to *R. plumosa* Gray, the totally different *R. lunata* which has a curious horned tubercle. Section *Albae*, as defined, is synonymous with Series *Glomeratae* Small. It is represented only by *R. alba* from the mountains of Puerto Rico. Section *Fuscae* includes *R. fuscoides* (which is here supplied with a description), *R. leptorhyncha*, *R. fascicularis*, *R. distans* sensu Clarke (also *R. fascicularis*), *R. gracilentata* sensu Clarke (*R. leptorhyncha*), *R. Lindeniana*, and *R. pallida* sensu Clarke (*R. brachychaeta*). This section is defined as having setae antrorsely scabrous, nut smooth, not transversely wrinkled. Clarke must have overlooked the slightly rugulose surface in *R. Lindeniana*. *R. brachychaeta* (wrongly identified by Clarke as *R. pallida*) I have put with true *R. pallida* in the Series *Chapmaniae*. Section *Glaucæ* is merely a name for a jumble of species having achenes with rugulose surfaces. Clarke placed a strong, and I think mistaken, emphasis on the importance of the original spelling of *Rhynchospora* as "*Rynchospora*."

As a result of this he took up the first specific name to appear in combination with the original "*Rynchospora*." If a specific name had always appeared with the spelling, "*Rhynchospora*," he made a new combination under the old spelling. This explains his recognition of *R. sparsa* Vahl in preference to the earlier combination *R. miliacea* (Lam.) Gray. It also explains why Vahl, Britton and Clarke are the only authorities cited after names of species long in good standing.

After the turn of the century, important treatments were included in the following: Small's Flora, 1903; the revision of Gray's Manual by Robinson & Fernald, 1908; and, later, Small's Manual, 1933. Britton also published *Rhynchospora* of Cuba,¹ another list which included new species and their descriptions.

SPECIFIC CRITERIA.—The species of *Rhynchospora* which come within the scope of this paper are perennials. The **ROOTS** are of little aid in classification. They are usually fibrous and richly branched or occasionally thickened and spongy with only a few short branchlets. The **BASES** are more often distinctive. In *R. pallida* they are usually cormous and covered with short, broad, imbricated scales—a condition occurring to a lesser degree in *R. megalocarpa*. In the Series *Cernuae* a short, densely fibrous caudex is developed, the fibres resulting from the fraying-out of the fibro-vascular strands in the lower portions of the old dried basal leaves. This character is one of several which are probably correlated with the intermittently exsiccated habitats of these species. The bases of *R. cubensis* and *R. stenophylloidea* are subligneous. A few species have stolons. Those of *R. fusca* are slender, whereas short, thick stolons bud out from the bases of *R. pallida*. *R. megalocarpa*, which populates the sand-hills of the southern Coastal Plain, also spreads by means of stolons. The commonest growth-habit, however, is a tuft; and several species, *R. inexpansa* among them, are reported as forming dense stools. An exception to the caespitose habit, as its name connotes, is *R. solitaria*.

The **BASAL LEAVES** are usually linear-elongate, from 1 to 7 mm. in width, or filiform. Commonly they are flat or somewhat canaliculate. The under surface is short-carinate, the keel be-

¹ Mem. Soc. Cubana Hist. Nat. ii. 185 (1916).

coming more prominent toward the apex so that the tip of the leaf is sharply triquetrous. This character is present, but less obvious, in a few species with broad, short leaves, such as *R. ciliaris* and *R. pruinosa*, in which the leaf is abruptly narrowed to an obtuse tip. Rarely the leaf-tips are rounded, as in *R. plumosa*. The angles of the tip, if not the entire margin of the leaf, are always more or less serrated. These microscopic teeth, apparently formed of pure silica, contribute in great part to the material worthlessness of the plants, for they render the leaves unfit for cattle-fodder. In *R. ciliaris* these serrations reach their maximum development as stiff, silvery cilia. Occasionally the leaves are involute, although this condition is difficult to determine from dried specimens. In *R. pruinosa* the leaves are not only canaliculate but also moderately revolute. However, the chief distinction of the leaves of this species lies in their peculiar upper surfaces. These are roughened and bear small white inclusions of lime which are responsible for the rimy or silvery appearance emphasized by the specific name. In another closely related species, *R. scabrata*, the upper surfaces of the leaves are definitely exasperate. The basal leaves vary from stiffly erect to flat and spreading to curling. The curling habit reaches its climax in the circinately coiled leaves of the tiny, depressed *R. crispa*. The CAULINE LEAVES are similar, in most cases, to those of the base. They decrease in size upward and are finally reduced to the setaceous or, less often, somewhat frondose bracts of the inflorescence. The typically closed sheaths are definitive of the *Cyperaceae* as a whole.

The CULMS are usually triquetrous and slender to robust, or filiform and subterete. The 2–several nodes each bear a leaf which may or may not subtend a lateral cluster of spikelets. The internodal surfaces are smooth or striate, and the culms range from stiffly erect to procumbent.

The INFLORESCENCE varies in size from a solitary terminal fascicle, as in *R. pallida*, to a terminal decomposed fasciculate cyme which is accompanied by 4–8 smaller lateral cymes, as in *R. miliacea*. Throughout this paper I have applied the term “cyme” to the compound, flat-topped or concave clusters of spikelets which characterize in particular the Series *Caducæ*. Compact bundles of mainly ascending spikelets are “fascicles”,

whether they are numerous and approximate in the cyme or are solitary and distant in the axils of the cauline leaves. Fascicles may be globose, turbinate or corymbiform, depending upon their shape. Compact masses of spikelets oriented in all directions are heads, capituli or glomerules and may also be of primary or secondary degree. Unfortunately I have not been able to study flowering material of the genus, for from the dried specimens it is difficult to ascertain whether the so-called cymes are determinate, but to all appearances the main axis and the successive axes in turn are terminated by a spikelet.

The SPIKELETS are usually ovoid, but they may be subglobose, as in *R. globularis*, or fusiform as in *R. capillacea*. The lower 2 or 3 of the spirally imbricated scales are comparatively small and empty. The succeeding 1-10 subtend perfect florets, each of which may produce an achene. The terminal 1-2 scales subtend rudimentary florets or are empty. Occasionally the spikelet contains only a single floret.

The SCALES are papery (not indurated), tightly, but more often loosely, imbricate, and persistent or caducous. They are commonly brownish and fairly constant in shade, most commonly castaneous or fuscous. In *R. alba* and several members of the Series *Cernuae* they are whitish; in *R. pallida* they have a reddish tinge. Those of *R. leptorhyncha*, on the other hand, are blackened, as are frequently those of *R. cephalantha* var. *typica*. The general outline of the fertile scales is ovate, on the one hand, to narrowly lanceolate, and on the other to suborbicular. When tightly imbricate they are concave. The midrib frequently extends as a mucro which is often serrulate, and in *R. ciliaris* bears straggly reddish-brown cilia.

The STAMENS are variable in number, from 1-12, but are usually 3. In *R. odorata* the filaments are conspicuously marcescent.

The hypogynous BRISTLES are presumably the remnants of a perianth. They are borne at the base of the achene and are arranged in upper and lower series consisting of 3 bristles each. In *R. alba*, however, the bristles are from 10-12 and in *R. macra* from 18-20. The increase in number is probably due to chorisis; occasionally I have seen an achene of *R. alba* with 2-pronged, presumably imperfectly divided, bristles. The broad, straplike

bristles of the *Glomeratae* are unique, not only in their shape and size, but in their retrorse barbs. In other series the bristles are capillary, or flattened only at the base, and the barbs, or better the minute serrulations, are directed upwards. There are a few forms in the Series *Glomeratae* which, like the species of other series, have bristles with antrorse barbs or with barbs failing. This problem and its importance has been discussed under *R. capitellata* f. *discutiens*. The bristles in the Series *Plumosae* are, as indicated by the name of the series, characteristically plumose. Several species of other series, however, have a few silky hairs at the bases of the bristles. Occasionally the bristles fail to develop. This is true in particular of *R. Chapmanii* and *R. nuda*, and also of occasional achenes of *R. perplexa*.

The STYLE has two stigmatic branches which are characteristic of the genus and which indicate the bicarpellary nature of the gynoecium.

The ACHENE is the most important single character in the determination of a specimen, for, almost without exception, that of every species is distinct. It is derived from the development of one of the paired ovules of the gynoecium at the expense of the other. The shape is commonly ovate, lenticular and biconvex; usually the achene is marginate. Those of species belonging to the Series *Glomeratae* are frequently slenderly prolonged toward the base, forming a gynophore. Other peculiarities of the achenes of this series are the heavy wire-like margins and the prominent central umbo or boss. The umbonate condition also appears in achenes of other series, e. g. *R. Harperi* of the *Fuscae*. More often the central area of the achene is picked out by a smooth, pale disc. This is particularly true of *R. filifolia* the white disc of which has a sheen like that of glass. The achenes of *R. compressa* suggested the specific name, for they are so flattened that they have a shrunken appearance as if they had dried while immature. Some other species with strongly compressed achenes are *R. perplexa*, *R. schoenoides*, and *R. tenuifolia*. Very few of the series have achenes with an absolutely plain smooth surface. Usually the surface is alveolate or cancellate. The alveoli may, as in the case of the *Chapmaniae*, be reduced to tiny pricks; or they may be shallow, superficial and isodiametric as in the *Harveyae*. The most common modification of the alveoli is that

in which they are more or less aligned across the achene with the transverse walls pulled up into ridges. This produces the rugulose to ridged effect which is common in the Series *Rariflorae*, *Cernuae*, *Cubenses*, *Harveyae*, *Globulares*, *Caducae*, and *Glaucæ*. Although the surface is ridged the individual alveoli may remain distinct, as in *R. caduca*, or they may be crowded so as to appear only as fine glistening striae between the ridges, or, in *R. tenuifolia*, over the faces of broad corrugations themselves. Like the scales, the achenes are brownish, but they vary in degree from the pale, lustreless shade of *R. nuda* to the dark, gleaming black-mahogany of *R. megalocarpa*. The measurements of the achenes are very dependable, and have been made with the aid of a finely divided steel rule, to tenths of a millimeter. The largest achenes in this section of the genus are those of *R. megalocarpa* (2.8–3.4 mm. wide, 3–4 mm. long). Among the smallest are those of *R. Knieskernii*, *R. sulcata*, and several species in the *Cernuae* the measurements of which do not exceed a millimeter in width and length.

Occasional trigonous achenes have been seen in the Series *Plumosae* and *Glomeratae*. Such anomalies are accompanied by tripartite styles. They probably represent the last traces of a tricarpellary condition.

The TUBERCLE, consisting of the indurated and persistent base of the style, is triangular and compressed. The achenes of the *Harveyae* which are, for the most part, tumid above, have conical tubercles. These are buttressed and slightly incrustated at the base by the narrowed summit of the achene. The tubercles in the Series *Chapmaniae* are extremely short, often apiculate. The tubercle of *R. compressa* is strongly depressed with a projecting basal flange. The margins of the tubercles in the Series *Fuscae* are thickly setose, and those of other series may be less so, or bare.

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and to Dr. Chester E. Cross. I have been generously given the opportunity to study material from the herbaria of the following institutions to the curators of which I express my great obligation: Academy of Natural Sciences, Philadelphia (P); California Academy of Sciences (CA); Catholic University of America (CU); Duke University (D); Gray Herbarium (G); Atkins Institution of the Arnold Arboretum (A); Louisiana State University (La); Missouri Botanical Garden (Mo); New England Botanical Club (NE); New York Botanical Garden (NY); St. Bernard College (StB); United States National Arboretum (USNA); United States National Museum (US); University of North Carolina (NC); University of Pennsylvania (Penn).

RHYNCHOSPORA Vahl. Scales spirally imbricate; the lower 1 (rarely)—2 to several scales vacant, the following 1–10 subtending perfect florets, the upper 1–2 florets staminate or rudimentary: stamens 1–12, usually 1–3: hypogynous bristles 0–20, when present usually 6: style bilobed at the apex or with 2 long, slender, stigmatic branches: achene more or less compressed, crowned with a conspicuous tubercle consisting of the broad, persistent, indurated base, or even the greater part, of the style.—Chiefly perennials with more or less triangular culms and axillary inflorescences. Species of tropical and subtropical regions of both hemispheres, temperate North America and Eurasia. (Name taken from *ῥύγχος*, a *snout* and *σπορά*, a *seed*, from the beaked achene.)—Enum. ii. 229 (1806); Gray, Ann. Lyc. N. Y. iii. 194 (1835); Kunth, Enum. ii. 287 (1837); Steud. Cyp. 139 (1855); Bentham & Hooker, Gen. Pl. iii. 1058 (1883); Pax in Engler & Prantl, Pflzfam. ii. 2: 116 (1887); Clarke in Urban, Symb. Ant. ii. 103 (1900); Pfeiffer in Fedde, Rep. Spec. Nov. xxxviii. 89 (1935). *Triodon* L. C. Richard in Persoon, Synops. i. 60 (1805) in a note; nomen rejiciendum. *Phaeocephalum* Ehrh. Beitr. iv. 146 (1789), nomen illegitimum.

Since this paper is limited to a consideration of the Section *Eurhynchospora* the generic definition given above is neither original nor complete; nor has any attempt been made to include in the list of generic synonyms the numerous tropical genera of Nees, none of which come within the scope of this paper.

In 1935 the name *Rhynchospora*¹ was conserved over *Triodon* L. C. Richard, which threw into synonymy all previous combinations made by Farwell² under *Triodon*. House³ in 1920 at-

¹ Int. Rules Bot. Nomencl. 90 (1935).

² Rep. Mich. Acad. Sci. xv. 167 (1913); xix. 253 (1917).

³ Am. Midland Nat. vi. 201 (1920).

tempted to set up the generic name *Phaeocephalum* Ehrh., but the name is excluded by the International Rules, under Art. 67 (3), as a unitary designation of species, not intended as a generic name.

However, at present the status of the generic name is once again challenged, for Pfeiffer¹ has brought up the problem of the inclusion of *Pleurostachys* Brongn.² and *Dichromena* Michx.³ within the genus. Whether Pfeiffer's solution, which reduces both genera to the status of synonyms under *Rhynchospora*, is sound, I do not know. It is a problem for the student of the *Rhynchosporae* as a whole. However, the name *Dichromena* has priority over *Rhynchospora*, and the inclusion of the two under one generic name would necessitate either the transfer of the species of *Rhynchospora* to *Dichromena*, following the precedent of Macbride⁴, or the conservation of the name *Rhynchospora* over *Dichromena* as proposed by Pfeiffer⁵, with the necessary combinations under *Rhynchospora*, many of which have already been made by that author.

Subgenus *DISTYLIS* Pax. Style deeply cleft; stigmatic branches linear, equal in length to the undivided portion of the style.—In Engler & Prantl, *Pflzfam.* ii. 2: 117 (1887). *Rhynchospora* 3. *Communes* Kunth, *Enum.* ii. 295 (1837). *Rhynchospora* ii. *Dichostyleae* Bentham & Hooker, *Gen. Pl.* iii. 1060 (1883). *Rhynchospora* Series B. *Diplostyleae* Clarke in Urban, *Symb. Ant.* ii. 104 (1900). Subgenus *Diplostylis* Pfeiffer in Fedde, *Rep. Spec. Nov.* xxxviii. 91 (1935).

Section *EURHYNCHOSPORA* Griseb. Scales thin and papery, not indurate, often loosely imbricate: bristles 0 (rarely)—20, usually 6 and equal to or exceeding half the achene in height, if bristles consistently failing achenes smooth (e. g. *R. Chapmanii*, *R. nuda*): achenes commonly ovate in outline, lenticular and gradually biconvex or umbonate, less often subglobose; surface smooth to strongly alveolate to striate and ridged: tubercle discrete, triangular or conical, compressed.—Goetting. *Abh.* vii. 272 (1857); Bentham & Hooker, *Gen. Pl.* iii. 1060 (1883); Pfeiffer in Fedde, *Rep. Spec. Nov.* xxxviii. 91 (1935). *Rhynchospora* Series B. *Diplostyleae*, *Divisio* 5. *Eu-Rhynchospora* Clarke in Kew Bull. *Add. Ser.* viii. 119 (1908). *Rhynchospora* ii. Subgenus *Eurhynchospora* Clarke ex Britton, *Trans. N. Y. Acad. Sci.* xi. 85 (1892).

¹ Fedde, *Rep. Spec. Nov.* xxxviii. 88 (1935); xliii. 258 (1938).

² Brongniart in Duperr. *Voy. Coq. Bot.* 172 t. 31 (1829).

³ *Fl. Bor.-Am.* i. 37 (1803).

⁴ *Field Mus. Pub. Bot.* iv. 166 (1929); viii. 113 (1930); xi. 5 (1931); xiii. 301 (1936).

⁵ Fedde, *Rep. Spec. Nov.* xliii. 261 (1938).

KEY TO SERIES IN SECTION EURHYNCHOSPORA

- a. Bristles retrorsely barbed, or if barbs antrorse or failing, bristles robust, straplike, pale, exceeding the achene. 1. Series *Glomeratae*.
- a. Bristles antrorsely barbed or failing, rarely smooth, then capillary and fragile. . . . b.
- b. Bristles well developed and heavily plumose for at least 1/2 their length or reduced to six basal tufts. . . . 2. Series *Plumosae*.
- b. Bristles upwardly serrulate with or without a few basal hairs, rarely smooth. . . . c.
- c. Surface of achene smooth or pricked by small dark pits; achene chestnut-brown or dark brown (then lenticular and moderately biconvex), not tumid. . . . d.
- d. Surface of achene pricked by tiny dark pits or, if surface smooth, bristles 1-3 and rudimentary or failing; lateral fascicles rare, with exception of 1-3 in *R. brachychaeta*. . . . 3. Series *Chapmaniae*.
- d. Surface of achene smooth; bristles 6 and well developed except in *R. fascicularis* var. *typica* and *R. debilis* where they are often 5 to 6 and rudimentary; lateral fascicles present in well developed specimens. . . . e.
- e. Achenes small, usually less than 1 mm. wide, light brown, pyriform or narrowly ellipsoid with the maximum width near the apex. . . . 4. Series *Fuscae*.
- e. Achenes exceeding 1 mm. in width (with the exception of that of *R. Fernaldii* which is minute and blackish), broadly ovate in outline, their maximum width corresponding to their midpoint. . . . 5. Series *Fasciculares*.
- c. Surface of achene transversely rugulose to ridged, or with alveoli forming a honeycomb-pattern, if rarely smoothish then brown and tumid to subglobose. . . . f.
- f. Culm terminated by an ovoid glomerule or spiciform cyme, or cymes, if compound corymbiform, small, with relatively few often straw-colored spikelets; culms relatively short to depressed. . . . g.
- g. Spikelets remote on capillary pedicels; cymes corymbiform, spreading; 2 species only, both of the Coastal Plain, *R. rariflora* also in the West Indies. . . . 6. Series *Rariflorae*.
- g. Spikelets approximate, if rarely pedicellate then strongly ascending; species limited to the West Indies. . . . 7. Series *Cernuae*.
- f. Culm terminated by a compound, usually decompound, glomerulose, corymbiform, congested or loose cyme; culms relatively tall, rarely depressed. . . . h.
- h. Spikelets with 1 floret, the solitary achene terminating its axis; achene longitudinally wrinkled as if shriveled; 2 species of the Greater Antilles. . . . 8. Series *Cubenses*.
- h. Spikelets with 2-several florets, one of which may be a terminal rudiment; achene not longitudinally wrinkled; many species of the Coastal Plain and the West Indies. . . . i.
- i. Achene surmounted by a grayish, conical-apiculate tubercle with a subterete base which is slightly buttressed and often slightly incrustated by the narrowed neck of the achene; surface of achene

- deeply alveolate and ridged only in *R. cullixa*, otherwise mahogany-brown, smoothish or with a honeycomb-pattern of shallow isodiametric alveoli. 9. Series *Harveyae*.
- i.* Achene usually surmounted by a deltoid, compressed tubercle which is often attenuate, if conical-discoid and projecting at the base not visibly buttressed. . . . *j.*
- j.* Achene broadly obovoid or slenderly ellipsoid-obovoid, dull, castaneous or catching the light in the prominent, deeply etched alveoli, usually ridged. . . . *k.*
- k.* Cymes stiff, erect or spreading; branchlets terminating in glomeruli which may be dense or limited to 3-4 globose spikelets
10. Series *Globulares*.
- k.* Cymes usually flexuous, corymbiform, densely fasciculate (except for the stiff, open netlike cymes of *R. miliacea*), occasionally glomerulose in reduced phases of *R. microcarpa*. 11. Series *Caducae*.
- j.* Achene pyriform, often slenderly so, yellowish-brown to light brown, usually glossy; the surface alveoli reduced to longitudinal striae which are intercepted by transverse corrugations or vague rugulosity. 12. Series *Glaucæ*.

Series 1. GLOMERATAE Small, emend. Plants of acid bogs of temperate North America and Eurasia with several species limited to the Coastal Plain; *R. alba* also in the mountains of Puerto Rico and (?) northeastern Brazil. Habit caespitose: leaves filiform to flattish and up to 5 mm. wide: culms capillary to stout, usually stiffly erect: inflorescence of 1 terminal and 1 to more (often several) lateral fascicles or glomerules, rarely cymose-fasciculate: spikelets 1-2-fruited: scales acute to mucronate, tightly or loosely imbricate: achene pyriform or with a conspicuous gynophore, smooth to granular or faintly rugulose, usually with a pale central disc; bristles 6, retrorsely barbellate, or if with barbs antrorse or failing the bristles robust, straplike and pale.—*Rhynchospora*, V. *Glomeratae* Small, Man. 175 (1933), in part. *Rhynchospora*, Series B. *Diplostyleae* Sect. 3. *Albae* Clarke in Urban, Symb. Ant. ii. 105 (1900).

KEY TO SPECIES IN SERIES GLOMERATAE

- a.* Achenes with a conspicuous, pale, wirelike margin, smooth, castaneous and unlined, usually lustrous, umbonate, with a pale disc and basally prolonged. . . . *b.*
- b.* Spikelets 1-fruited, the solitary achene terminating the axis. . . . *c.*
- c.* Inflorescence of 2-6 dense, globose glomerules (rarely subhemispherical and looser on poorly developed specimens), the crowded spikelets ascending to reflexed. . . . *d.*

- d. Achenes minute, 0.9–1.1 mm. wide, 1.4–1.6 mm. long
1. *R. microcephala*.
- d. Achenes 1.1–1.6 mm. wide, 1.8–2.5 mm. long. . . . 2. *R. cephalantha*.
- c. Inflorescence of 3–7 turbinate to loosely hemispherical fascicles, the loosely aggregated spikelets ascending to divergent. 3. *R. chalarocephala*.
- b. Spikelets usually 2- or more-fruited, or if one-fruited the achene always succeeded by a rudimentary floret. . . . e.
- e. Achene prominently umbonate, with a pale disc, depressed sides and raised wire-like margins; inflorescence of usually several strict, fasciculate, rarely glomerulose, cymes. 4. *R. glomerata*.
- e. Achene gradually rounded without a prominent umbo, surface a uniform brown, margins narrow; inflorescence of 2–6 compact, irregularly lobed fascicles, less often cymose-fasciculate. 5. *R. capitellata*.
- a. Achenes inconspicuously marginate, finely granular to slightly rugulose, dark brown toward the margins from which short, dark, broken lines run in between the roughenings toward a more or less definite pale, polished disc. . . . f.
- f. Bristles 10–20, usually sparingly plumose at base. . . . g.
- g. Bristles 10–12; achenes 0.9–1.2 mm. wide, 1.6–1.8 mm. long; spikelets several-fruited or, if 1-fruited, with terminal rudimentary floret; scales typically whitish 6. *R. alba*.
- g. Bristles 18–20; achenes 1.3–1.4 mm. wide, 2–2.1 mm. long; spikelets 1-fruited, without a terminal rudimentary floret; scales rusty. 7. *R. macra*.
- f. Bristles 6, serrulate, not plumose at base. . . . h.
- h. Achene pyriform, not basally prolonged; fascicles 3–4, borne along the entire length of the culm. 8. *R. Knieskernii*.
- h. Achene oblong-elliptic, with a very slender gynophore; fascicles 1–2, limited to the upper portion of the culm 9. *R. capillacea*.

1. *R. MICROCEPHALA* Britt. ex Small. Caespitose: leaves 1–3 mm. wide, narrowly linear, closely ascending, erect, becoming minutely serrulate and triquetrous toward the tips: culms subterete, smooth, slender, erect to flexuously ascending, 3.3–8.4 dm. high: spikelets crowded into 1 terminal and 2–5 lateral, densely globose, or less frequently looser, subhemispherical heads 1.1–1.8 cm. wide, on included peduncles: spikelets slenderly lanceolate-attenuate, sessile, ascending to reflexed, typically forming a solid echinate ball, 1-fruited; the solitary fertile floret terminal with no trace of a sterile rudiment: scales ovate to lanceolate, acute, chestnut to dark brown, tightly inrolled especially at the apices: bristles 6, straplike, retrorsely barbellate; their apices convergent about the tubercle which they slightly exceed: achene 0.9–1.1 mm. wide, 1.4–1.6 mm. long; its body suborbicular, with a short but narrow and distinct gynophore; surface smooth, lustrous, brown, with a prominent light umbo and a raised wirelike margin: tubercle subulate-attenuate, 0.7–1.1 mm. high; its base not wholly covering the summit of the achene. PLATE 818, FIGS. 3A and 3B; MAP 4.—Fl. 195, 1327 (1903) and Man. 181 (1933); Fernald, RHODORA, xxxvii. 404, pl.

391, figs. 4 and 5 (1935); Fernald & Gale, RHODORA, xlii. 428, figs. 3 and 4 (1940). *R. axillaris* var. *microcephala* Britton, Trans. N. Y. Acad. Sci. xi. 89 (1892); Britton & Brown, Ill. Fl. i. 279 (1896); Britton, Man. 185 (1901); Robinson & Fernald in Gray, Man. ed. 7: 201 (1908). *R. axillaris* sensu Britton in Britton & Brown, Ill. Fl. ed. 2: i. 344 (1913), in part; Britton, Mem. Soc. Cubana Hist. Nat. ii. 195 (1916), not as to name-bringing syn. *Schoenus axillaris* Lamarck.—Wet peaty or sandy clearings, swamps and pond-margins of the Coastal Plain from New Jersey southward to the Florida Peninsula, thence west to Mississippi; also in western Cuba. NEW JERSEY: east of Parkdale (2 miles), Atlantic Co., Aug. 17, 1905, *Van Pelt* (P); Monmouth Co., 1845, *Knieskern* (NY, TYPE of *R. axillaris* var. *microcephala*). DELAWARE: Indian River, Millsboro, Sussex Co., Sept. 21, 1907, *Brown* (P). WASHINGTON, DISTRICT OF COLUMBIA: Sept. 18, 1901, *Steele* (NY). MARYLAND: Salisbury, Wicomico Co., Sept. 28, 1863, *Commons* (G, P). VIRGINIA: sphagnous magnolia swamp at head of Garnett Creek, about 1 mile northeast of St. Stephen's Church, King and Queen Co., *Fernald & Long*, no. 13275 (G); fresh to brackish swales along North Landing River, near Creed's, Princess Anne Co., *Fernald, Long & Fogg*, no. 4830 (G, P); wet peaty clearings in woods of *Pinus serotina*, south of Grassfield, Norfolk Co., *Fernald & Long*, no. 3785 (G, P); moist sandy and peaty pine barrens south of Lee's Mill, Isle of Wight Co., *Fernald & Long*, no. 12592 (G); wet depressions in sandy pine barrens near Cox Landing, Nansemond Co., *Smith & Hodgdon* in Pl. Exsic. Gray., no. 923 (G, NY, P); sandy border of wooded swamp about 3 miles northwest of Ivor, Southampton Co., *Fernald & Long*, no. 6091 (G, P); sphagnous bog about 1 mile northwest of Dahlia, Greensville Co., *Fernald & Long*, no. 8992 (G, P). NORTH CAROLINA: pineland, 3 miles north of Winton, Hertford Co., *Godfrey*, no. 5206 (G); moist rich soil, recently cleared land, Williamston, Martin Co., *Randolph & Randolph*, no. 694 (G); wet grassy railroad-ditch, 1 mile east of Balley, Wilson Co., *Oosting*, no. 1670 (CU, D); savanna at Chocowinity, Beaufort Co., *Godfrey*, no. 5415 (G); wet sandy soil, roadside near Carteret Co. Line on road to Maysville, Jones Co., *Beaven*, no. 499 (D); moist open sandy soil, north side of White Lake, Bladen Co., *Blomquist*, no. 10859 (CU); low boggy soil between Coats and Erwin, Harnett Co., *Correll & Blomquist*, no. 2537 (CU, D, G); edge of pocosin, Southport Supply Road, Brunswick Co., *Oosting*, no. 33722a (D); Cumberland Co., *Blomquist*, no. 5647 (D); marsh at Springfield, Scotland Co., *Godfrey*, no. 5098 (G). SOUTH CAROLINA: near Kershaw, Lancaster Co., *House*, no. 2618 (NY); wet soil, Hartsville, Darlington Co., July 12, 1920, *Norton* (NC); sandy drainage-ditch, 2 miles west of Salters, Williamsburg Co.,

Godfrey & Tryon, no. 502 (D, G, NY); Sumter Co., *Holdaway*, no. 11 (D); boggy swale, 5 miles south of Columbia, Lexington Co., *Godfrey & Tryon*, no. 1263 (G). GEORGIA: Cypress Pond, Bethesda Church, Effingham Co., *Eyles*, no. 6398 (CU); Chase Prairie, Okefenokee Swamp, Charlton Co., *J. S. Harper*, no. 731 (G). FLORIDA: South Jacksonville, Duval Co., Aug. 11, 1909, *Lang* (P); low pineland bordering Lake Geneva, near Keystone Heights, Clay Co., Feb. 24, 1925, *O'Neill* (CU); margin of pond along west boundary of Welaka, Putnam Co., June 26, 1940, *Laessle* (CU); in a low pineland, 7 miles north of Ft. Christmas, east of Orlando, Orange Co., *O'Neill*, no. 7679 (CU; US, without number); wet ditch, Lake Jovita, Pasco Co., *O'Neill*, no. 2609 (NY); flatwoods, 1 mile from Tiger Lake, Polk Co., *McFarlin*, no. 3466 (CU); ditch, Hardee Co., July 29, 1940, *Schallert* (G); margins of ponds in pine barrens, Apalachicola, Franklin Co., *Chapman in Biltmore Herb.*, no. 864b (G, in part). ALABAMA: in a wet place, Perdue, Coffee Co., *Blanton*, no. 83 (US). MISSISSIPPI: Petit Bois Island, Jackson Co., *Tracy*, no. 4884 (NY, US); Biloxi, Harrison Co., *Tracy*, no. 1361 (NY). CUBA: in a belt of a species of *Andropogon*, Laguna Tobero, Remates, *Ekman*, no. 11357 (NY); wet soil, Laguna los Indios and vicinity, Pinar del Rio, *Shafer*, no. 10810 (NY) and 10819 (US); in floating islands, at a laguna west of town, La Grifa, Pinar del Rio, *Ekman*, no. 11274 (US); deposited on the shore of the laguna, Laguna Santa Maria, Pinar del Rio, *Ekman*, no. 17240 (NY).

2. R. CEPHALANTHA Gray. Caespitose: leaves 1–4.5 mm. broad, flat or tending to become inrolled on drying, serrulate on upper margins, erect; radical leaves equalling about $\frac{1}{3}$ the culm; cauline leaves short: culms slender to stout, erect, obtusely trigonous, 0.4–1.1 m. tall: inflorescence 1–5 dm. long; glomerules densely subglobose to loosely hemispherical, 1–2.2 cm. wide, terminal and solitary or accompanied by 1–4 smaller lateral glomerules on subincluded peduncles: bracts foliaceous and conspicuous: spikelets ovoid, 4–6 mm. long, compact, sessile; the fertile floret consistently terminal and solitary with no trace of a succeeding rudimentary floret: scales castaneous to blackish, slightly mucronate, so tightly involute at their apices as to give an echinate appearance to the glomerule: bristles 6, robust, strap-like, with the margins and upper surfaces retrorsely barbed, stramineous to light brown, equalling to slightly exceeding the tubercle around which they converge: achene 1.1–1.6 mm. broad, 1.8–2.4 mm. long; its body suborbicular, usually with definite shoulders, lenticular and prominently umbonate, with a very slender gynophore; the sides depressed and rimmed by a raised wire-like margin; surface smooth, lustrous, castaneous, paler over the umbo: tubercle compressed, subulate-attenuate, 1.4–2.4 mm. long.

KEY TO THE VARIETIES OF *R. CEPHALANTHA*

Achenes 1.4–1.6 mm. wide, 2–2.5 mm. long; habit usually stiffly erect; culms often robust.

Glomerules subglobose to loosely hemispherical, 1–3 (rarely 4 with the lowermost poorly formed); culms slender to stoutish

2a. var. *typica*.

Glomerules densely subglobose, 4–7 in number, the lowest remote; culms stout.....

2b. var. *pleiocephala*.

Achenes 1.1–1.2 mm. wide, 1.8 mm. long; habit weakly erect;

culms slender, attenuated in appearance.....

2c. var. *attenuata*.

2a. Var. *TYPICA* Fernald & Gale. Leaves 1.5–2.5 (–3) mm. broad, tending to become inrolled on drying: culms slender, 0.4–1 m. in height: inflorescence 1–2.8 dm. long (rarely longer) comprising about $\frac{1}{5}$ the culm; glomerules subglobose to loosely hemispherical, 1.3–2.2 cm. wide, terminal and solitary or accompanied in the upper axils by 1–2 (rarely 3) smaller glomerules, then only the terminal glomerule subcompound to several-lobed: achene 1.4–1.6 mm. broad, 2–2.4 mm. long. PLATE 818, FIGS. 4A and 4B; MAP 7.—*RHODORA*, xlii. 423 (1940). *R. cephalantha* Gray, Ann. Lyc. N. Y. iii. 218, pl. 6, fig. 30 (1835) and Man. 533 (1848), in part var. *pleiocephala*, as with later authors; Chapman, Fl. So. U. S. 528 (1860); Fernald, *RHODORA*, xxxvii. 403, pl. 391, figs. 2 and 3 (1935). *R. axillaris* Britton, Bull. Torr. Bot. Cl. xv. 104 (1888) and Trans. N. Y. Acad. Sci. xi. 89 (1892), in part var. *pleiocephala*, as with later authors, not as to name-bringing syn. *Schoenus axillaris* Lam.; Britton & Brown, Ill. Fl. i. 279, fig. 655 (1896); Britton, Man. 185 (1901); Small, Fl. 195 (1903) and Man. 181 (1933); Robinson & Fernald in Gray, Man. ed. 7: 201, fig. 327 (1908). *Phaeocephalum axillare* House, Am. Midland Nat. vi. 201 (1920).—Sphagnous bogs of southern New Jersey, southward on the Coastal Plain to Georgia, thence west to eastern Louisiana. NEW JERSEY: bog southeast along P. R. R., Bombat, Ocean Co., Aug. 25, 1909, *Long* (P); east of Parkdale, Atlantic Co., Aug. 17, 1905, *Van Pelt* (P); *Gray* ?, no. 1 (NY, TYPE; accompanied by notes in Gray's handwriting); natural bog along Mullica River about 1.5 miles southeast of Atsion, Burlington Co., *Fogg*, no. 5662 (G). DELAWARE: swamps along Queen Anne Railroad, near Ellendale, Sussex Co., Aug. 17, 1899, *Commons* (P). MARYLAND: open white gravel bog, Powder Mill Bogs, near Lewiston, Prince George Co., *Blake*, no. 10670 (CA). VIRGINIA: argillaceous and siliceous boggy depression southeast of Petersburg, at head of Poo Run, Prince George Co., *Fernald & Long*, no. 6090 (G, P); depression in argillaceous woods west of Winfield's Mill, Dinwiddie Co., *Fernald & Long*, no. 13902 (G); sphagnous argillaceous boggy depression just north of Wakefield, Sussex Co., *Fernald & Long*, no. 7352 (G, P); sphagnous bog about 1 mile northwest of Dahlia, Greensville Co., *Fernald & Long*, no. 8993 (G, NY, P).

NORTH CAROLINA: sphagnous bog at Method, Wake Co., *Godfrey*, no. 4985 (CA, D, G); drainage-ditch at Carolina Beach, New Hanover Co., *Godfrey*, no. 4719 (G, NC); roadside-ditch between Beaufort and Atlantic, Carteret Co., *Blomquist*, no. 11300 (D). GEORGIA: cypress-pond, Bethesda Church, Effingham Co., *Eyles*, no. 6397 (CU); edge of cypress-pond, near Smithville, Lee Co., *Eyles*, no. 1711 (CU). LOUISIANA: in low pine barrens, St. Tammany Parish, Sept. 14, 1892, *Langlois* (US).

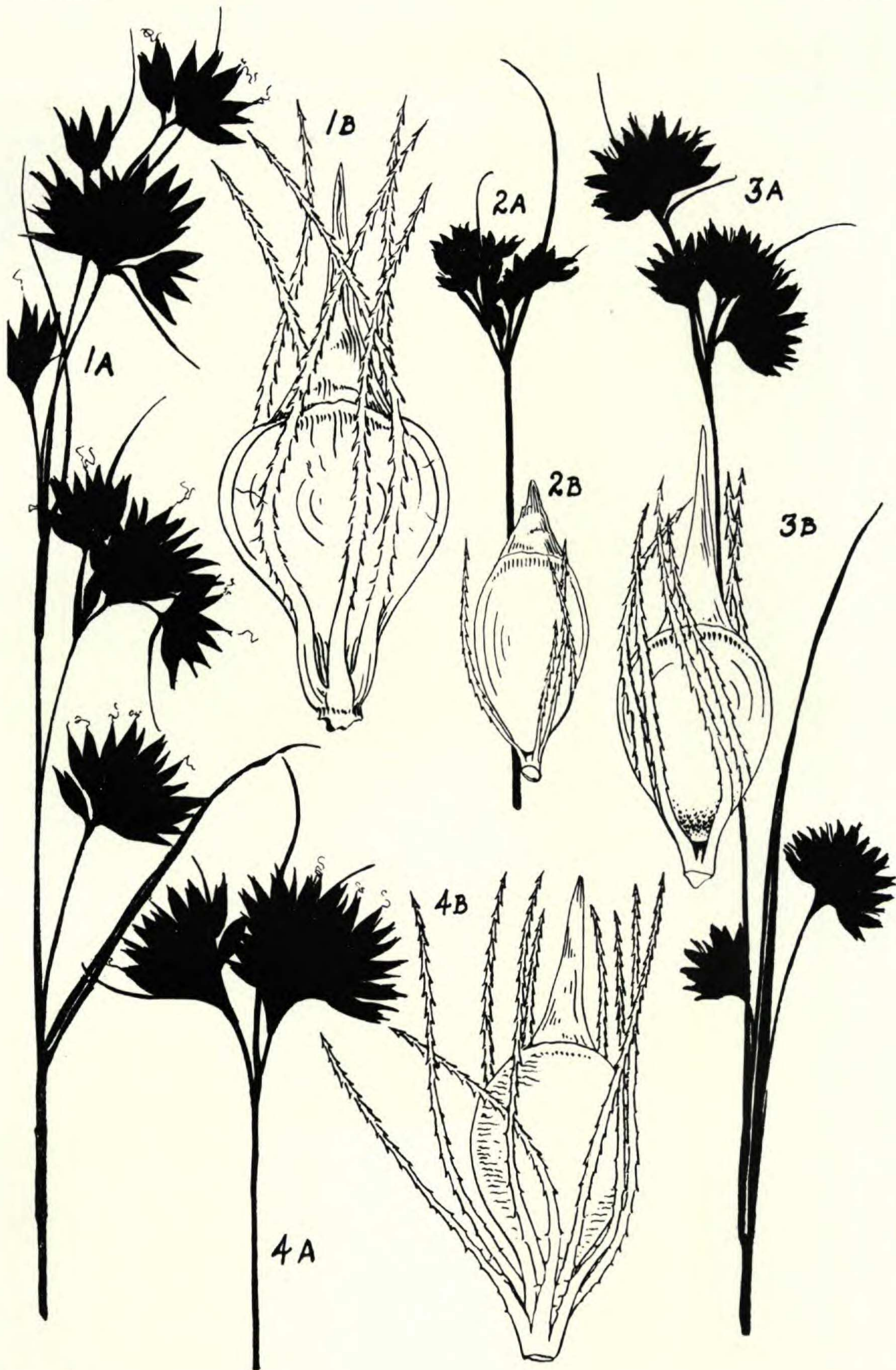
Forma **antrorsa**, f. nov. Setis antorse hispidulis.—Occasional in range of the typical form. NEW JERSEY: Hammonton, Atlantic Co., Aug. 4, 1907, *Bartram* (P); Parkdale, Camden Co., Sept. 18, 1916, *Pennell*, no. 9032 (NY); Quaker Bridge, Burlington Co., Sept. 3, 1867, *Parker* (G, in part the typical form; US); same locality, Aug. 18, 1866, *Diffenbaugh* (P); border of cranberry bog along Little Hauken Creek, North Jenkins, Burlington Co., July 28, 1937, *Long*, no. 50858 (P); Symmes' Place 3 miles west of Cedar (Warren) Grove, Burlington Co., *Stone*, no. 14517 (P). DELAWARE: Ellendale, Sussex Co., Aug., 1874, *Canby* (G, NY, US); same locality, July 9, 1908, *Van Pelt* (P); sandy swamps near Georgetown, Aug. 26, 1897, *Commons* (P). NORTH CAROLINA: savanna 5 miles east of Jacksonville, Onslow Co., Aug. 6, 1938, *Godfrey*, no. 5808 (G, TYPE). SOUTH CAROLINA: drainage ditch, 3 miles north of McClellanville, Charleston Co., July 19, 1939, *Godfrey & Tryon*, no. 677 (G); grass-sedge bog or savanna, 12 miles north of Georgetown, Georgetown Co., Aug. 2, 1939, *Godfrey & Tryon*, no. 752a (D, G, NY).

2b. Var. **PLEIOCEPHALA** Fernald & Gale. Leaves 2.5–4.5 mm. broad, flat: culms stout, 0.6–1.1 m. high: inflorescence 1.4–5 dm. long, comprising $\frac{1}{4}$ – $\frac{1}{2}$ the culm; glomerules 4–7, densely subglobose, 1.8–2 cm. wide, 1–3 borne in the terminal and preceding axil, remainder remote: spikelets fulvous to castaneous. MAP 5.—RHODORA, xlii. 424 (1940). *R. cephalantha* of earlier authors in part.—Exsiccated pond-holes and swampy ground of the Coastal Plain from southeastern Virginia to eastern Louisiana. VIRGINIA: abundant and dominating an exsiccated argillaceous pond-hole in woods, about 1 mile south of Mercy Seat Church, Surry Co., *Fernald & Long*, no. 8994 (G, TYPE; NY and P, ISOTYPES); dominant in flat sphagnous pinelands, Collier's Yard, 3–4 miles southwest of Petersburg, Dinwiddie Co., *Fernald & Long*, no. 10548 (G); pond-hole in pine and oak woods near Three Creek, north of Emporia, Greensville Co., *Fernald & Long*, no. 9283 (G, P). NORTH CAROLINA: moist swampy ground, Manteo-Wancheese, Roanoke Island, Dare Co., *Blomquist*, no. 7500 (D); low pineland at Dunn, Harnett Co., *Godfrey*, no. 6122 (D, G); in burned pocosin 5 miles north of White Lake, Bladen Co., *Blomquist*, no. 10872 (D, G); ditches near Wilmington, New Hanover Co., *Biltmore Herb.* no. 279a (G, NC, US); moist place

in savanna, Southport, Brunswick Co., Aug. 13, 1930, *Blomquist* (D); pineland at Nakina, Columbus Co., *Godfrey*, no. 6347 (G). SOUTH CAROLINA: sandy drainage ditch, 2 miles west of Salters, Williamsburg Co., *Godfrey & Tryon*, no. 504 (D, G, NY, P); grass-sedge bog or savanna, 12 miles north of Georgetown, Georgetown Co., *Godfrey & Tryon*, no. 1061 (G, NY, P); boggy ditch in pine barrens, 2 miles east of Meggetts, Charleston Co., *Wiegand & Manning*, no. 582 (G). GEORGIA: Waycross, Ware Co., Aug. 18, 1909, *Lang* (P); pine barrens, near Lem Griffin's Camp, Okefenokee, Clinch Co., *Eyles*, no. 133 (CU); cypress head, Valdosta, Lowndes Co., May 27, 1940, *Sargent* (*Sargent Herb.*); wet meadow, Leslie, Sumter Co., *Harper*, no. 413 (G, NY, US). FLORIDA: swampy places in pine barrens near Jacksonville, Duval Co., *Curtiss*, no. 5016 (G, US); cypress swamp, vicinity of Eustis, Lake Co., *Nash*, no. 845 (CU, G, NY, P, US); swamp, Okefenokee region, Brevard Co., *Fredholm*, no. 5821 (G); bogs and shady swamps, Apalachicola, Franklin Co., *Chapman in Biltmore Herb.*, no. 279b (G, NY). ALABAMA: Mifflin Creek, vicinity of Elberta, Baldwin Co., Aug. 21, 1925, *Wolf* (StB); in a wet place, Perdue, Coffee Co., *Blanton*, no. 83 (CA); ditches and swampy thickets, Mobile, Mobile Co., June, 1878, *Mohr* (US). MISSISSIPPI: Ocean Springs, Jackson Co., *Tracy*, no. 96 (NY); Wisdom, Harrison Co., *Tracy*, no. 3418 (G, NC, NY, US); open pine woods, 2 miles west of Bay of St. Louis, Hancock Co., *Correll & Correll*, no. 9103 (D). LOUISIANA: pine flatwoods west of Covington, St. Tammany Parish, *Brown*, no. 6649 (La); open pineland north of Abita Springs, St. Tammany Parish, *Pennell*, no. 4137 (D, NY, P); low moist grassy soil of open prairie, 3 miles east of Robert, Tangipahoa Parish, *Correll & Correll*, no. 9217 (D).

Forma **controversa**, f. nov. Setis antrorse hispidulis.—In-frequent in the range of the typical form. SOUTH CAROLINA: drainage ditch, 3 miles north of McClellanville, Charleston Co., *Godfrey & Tryon*, no. 675 (G); grass-sedge bog or savanna, 12 miles north of Georgetown, Georgetown Co., *Godfrey & Tryon*, no. 752 (G, TYPE; NY, ISOTYPE); shallow peaty pond in pine barren, 9 miles north of Georgetown, Georgetown Co., *Godfrey & Tryon*, no. 759 (D, G).

Var. **attenuata**, var. nov. Foliis 1–3 mm. latis planis: culmis 6–8 dm. altis gracilibus attenuatis: inflorescentia 2.2–3 dm. alta, culmo duplo vel triplo brevior; glomerulis 3–5 laxe subglobosis vel subhemisphaericis, 1–1.8 cm. latis: spiculis 4–4.5 mm. longis castaneis: achaenio 1.1–1.2 mm. lato 1.8 mm. longo: tuberculo 1.4–1.8 mm. alto. MAP 6.—Swamp-margins and moist pinelands of the Coastal Plain of the Carolinas (rare), Mississippi and Alabama. NORTH CAROLINA: Wilsons Mills, Johnston Co., *Ashe* (NC). SOUTH CAROLINA: flats across from paper mill,



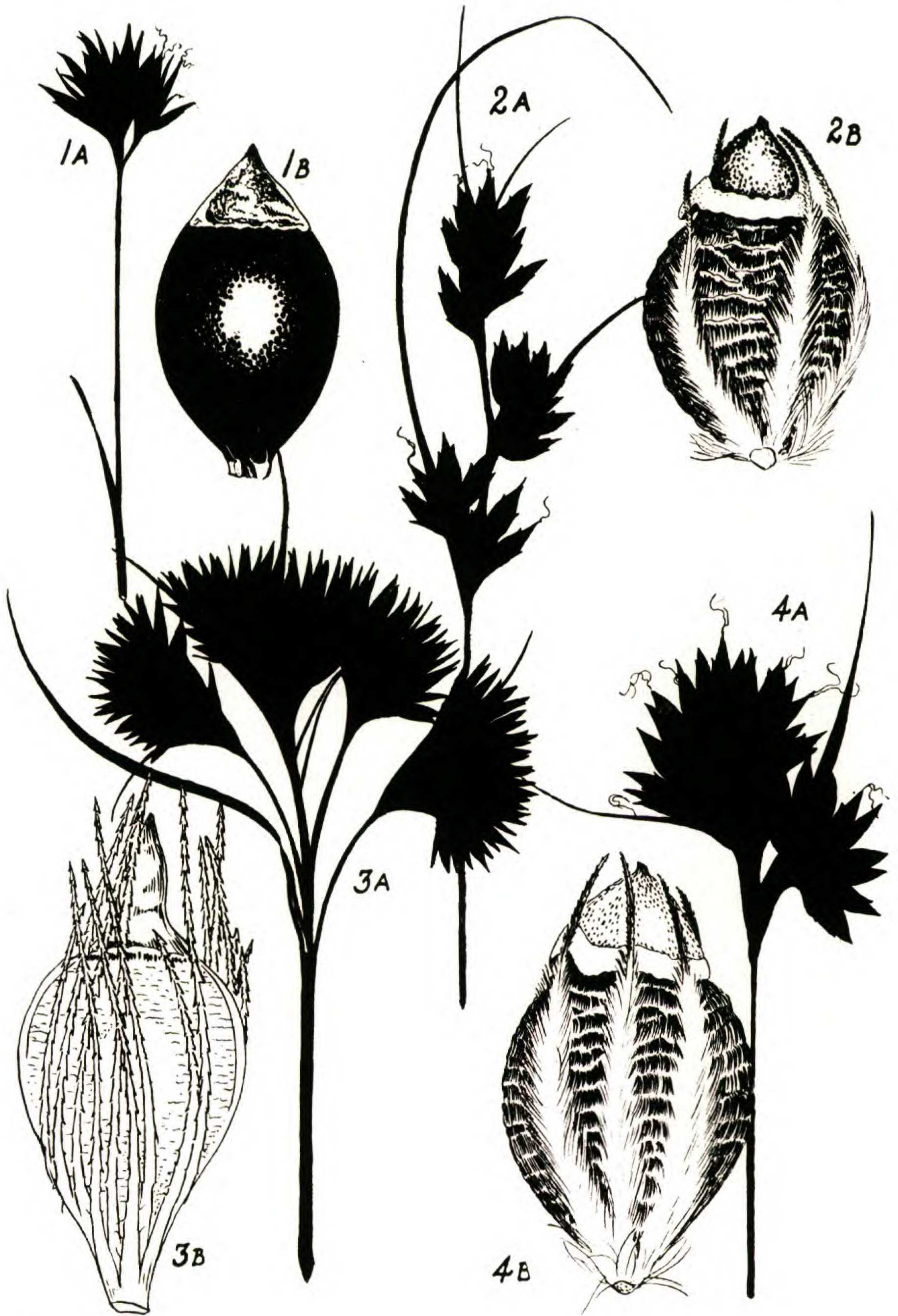
S. G. del.

RHYNCHOSPORA GLOMERATA VAR. TYPICA: FIG. 1A, portion of inflorescence, $\times 2$; FIG. 1B, achene, $\times 20$.

R. KNIESKERNII: FIG. 2A, portion of inflorescence, $\times 2$; FIG. 2B, achene, $\times 20$.

R. CAPITELLATA: FIG. 3A, inflorescence, $\times 2$; FIG. 3B, achene, $\times 20$.

R. ALBA: FIG. 4A, portion of inflorescence, $\times 2$; FIG. 4B, achene, $\times 20$.



S. G. del.

RHYNCHOSPORA SOLA: FIG. 1A, inflorescence, $\times 2$; FIG. 1B, achene, $\times 20$.
 R. PLUMOSA: FIG. 2A, inflorescence, $\times 2$; FIG. 2B, achene, $\times 20$.
 R. MACRA: FIG. 3A, portion of inflorescence, $\times 2$; FIG. 3B, achene, $\times 20$.
 R. INTERMEDIA: FIG. 4A, inflorescence, $\times 2$; FIG. 4B, achene, $\times 20$.

Hartsville, Darlington Co., July 5, 1909, *Coker* (NC). ALABAMA: in a wet place, Perdue, Coffee Co., Aug. 23, 1933, *Blanton*, no. 83 (G, TYPE; CU, US, ISOTYPES); about swamp, Elberta, Baldwin Co., Aug. 21, 1926, *Wolf* (StB); common in swamp, Spring Hill, Mobile Co., Aug. 6, 1897, *Bush*, no. 243 (NY, US); moist sandy pineland, Theodore, Mobile Co., Aug. 30, 1912, *Pennell*, no. 4423 (NY, P); Mobile, Mobile Co., July 20, 1897, *Baker*, no. 843 (NY). MISSISSIPPI: Ocean Springs, Jackson Co., Aug. 21, 1889, *Tracy*, no. 124 (NY); same locality, July 18, 1891, *Earle* (NY); same locality, Aug. 27, 1891, *Seymour*, no. 8 (CA, G, NC); Biloxi, Harrison Co., July 31, 1900, *Tracy*, no. 6993 (G); same locality, July 25, 1892, *Tracy*, no. 1361 (G, US).

An examination of *R. microcephala* Britt. ex Small and *R. cephalantha* var. *pleiocephala* from the coastal areas of the Carolinas, Mississippi and Alabama has brought to light the existence of certain specimens, the achenes of which are smaller than those of the already known varieties of *R. cephalantha*, but larger than those of *R. microcephala*. At first sight these specimens appear as intermediate between the two species mentioned and suggest, as preferable, a restoration of Britton's *R. cephalantha* var. *microcephala*. However, one would expect these southern plants, if truly intermediate, to present a series of achenes ranging in size from those of *R. microcephala* to those of *R. cephalantha*. Actually, however, the achenes of these specimens appear to be of a definite size larger than those of the former, smaller than those of the latter species. The glomerules of this southern variety are from 2–4, hemispherical and indistinguishable from the occasionally smaller, looser, hemispherical glomerules of *R. cephalantha*. I am, therefore, assigning it to *R. cephalantha* as var. *attenuata*, to be distinguished from var. *typica* and var. *pleiocephala* primarily by its smaller achene; secondarily by its attenuated appearance, consistently weak glomerules and restricted southern range.

3. *R. CHALAROCEPHALA* Fernald & Gale. Caespitose: leaves 1– (rarely) 2 mm. wide, flat, crowded, erect; upper margins often minutely serrulate; tips triquetrous: culms subterete, slender to rarely stout, 1.8–8.3 dm. high: fascicles 3–7, remote, the majority 2–5 lobed; the terminal fascicle turbinate to loosely subhemispherical, 0.9–1.8 cm. in diameter; lateral fascicles consistently turbinate, on included peduncles: spikelets lanceolate in outline, loosely aggregated, ascending to divergent; the fertile floret solitary, abruptly terminating the axis of the spikelet: scales

lanceolate, acute, tightly imbricate about the achene and tubercle: bristles 6, robust, strap-shaped, retrorsely barbellate, erect, equalling the tubercle to slightly exceeding it: achene obovoid, lenticular, 0.9–1 mm. wide, 1.4–1.7 mm. long, with more or less definite shoulders and a drawn-out excessively slender gynophore; surface smooth, shining, umbonate, with depressed sides and a raised wirelike margin: tubercle subulate-attenuate, compressed, 1–1.6 mm. long; its base much narrower than the apex of the achene. PLATE 818, FIGS. 1A and 1B, MAP 8.—RHODORA, xlii. 426, figs. 1 and 2 (1940).—Swamps, lake-borders and roadside ditches of the Coastal Plain from the New Jersey pine barrens to Florida. NEW JERSEY: wet pine barrens, Sims Place, Burlington Co., *Drushel & Svenson*, no. 6860 (G); Parkdale, Camden Co., *S. Brown*, no. 56 (P); peaty and sphagnous pond-hole depression near Hardingville, Gloucester Co., *Long*, no. 47134 (P); moist pine barrens, Egg Harbor City, Atlantic Co., *Mackenzie*, no. 5558 (NY); Maurice River flats east of Vineland, Cumberland Co., Aug. 12, 1923, *Bassett & Long* (P); wet peaty pond-hole about 1 mile west of Bennett, Cape May Co., *Long*, no. 23488 (P). DELAWARE: moist soil, Lewes, Sussex Co., Aug. 15, 1895, *Commons* (P); burned swamp, standing water, near Maryland line, *Beaven*, no. 69 (D). MARYLAND: marsh in abandoned mill pond near Sharptown, Wicomico Co., *O'Neill*, no. 7430 (CU, NY). VIRGINIA: sandy and peaty border of Cat Pond south of Benns Church, Isle of Wight Co., *Fernald & Long*, no. 7357 (G, TYPE; P, ISOTYPE); deep peat and mud, southeastern shore of Lake Drummond, Great Dismal Swamp, west of Wallacetown, Norfolk Co., *Fernald & Long*, no. 13570 (G). NORTH CAROLINA: pineland, Sampson Co., *Blomquist*, no. 5657 (D); 4 miles north of Beaufort, Carteret Co., July 18, 1939, *Engels* (NC); savanna, 8 miles southwest of Jacksonville, Onslow Co., *Godfrey*, no. 6469 (G, NC); Pender Co., *Hyams*, no. 4979 (NY); edge of pocosin, 15 miles north of White Lake, Bladen Co., *Blomquist*, no. 10874 (CU, D); dried-out road-making sand-pit, 4 miles east of Bolton, Columbus Co., *Wiegand & Manning*, no. 581 (G); Southport, Brunswick Co., Aug. 13, 1930, *Blomquist* (G, P as no. 5648). SOUTH CAROLINA: shrub-bog, 3 miles east of Georgetown, Georgetown Co., *Godfrey & Tryon*, no. 774 (G); sandy drainage ditch, west of Salters, Williamsburg Co., *Godfrey & Tryon*, no. 514 (G, NY); marshy border of lake, 8 miles southeast of Columbia, Lexington Co., *Godfrey & Tryon*, no. 1339 (G, NY). FLORIDA: swamps, Sanford, Orange Co., Nov. 3, 1927, *Rapp* (NY); prairie, Pinky-Villa, Kissimmee, Osceola Co., Oct. 1, 1938, *Singletary* (D).

4. *R. GLOMERATA* (L.) Vahl. Caespitose: leaves flat, 2.5–5 mm. wide, linear-attenuate, carinate toward the apex with finely serrulate margins: culms triquetrous, smooth, ascending, 0.6–1.1

m. high, the upper $\frac{1}{3}$ – $\frac{1}{2}$ bearing the inflorescence, flexuous to arching: inflorescence composed of 3–6 narrow, flexuous, fasciculate cymes or large loose glomerules: spikelets ovoid, 4.5–6.5 mm. long, subsessile, ascending to spreading, 2–3-fruited (or if 1-fruited the spikelet terminated by a sterile floret): scales acute to obtuse, loosely imbricated except when the spikelet is 1-fruited, originally apiculate but usually soon erose, castaneous to dark brown: bristles 6, straplike; the margins retrorsely and heavily echinate; the tips connivent about the apex of the tubercle: achene 1.4 mm. wide, 1.5–1.7 mm. long; its body suborbicular, with definite shoulders, basally prolonged; surface glossy with pronounced pale umbo and heavy wirelike margin: tubercle compressed-subulate, 1.3–1.8 mm. long.

4a. Var. **typica**. Inflorescence composed of 4–6 narrow cymes, the small dense ultimate fascicles of which are borne on 3–4 slender approximate, ascending to arching branchlets which exceed one another so as to produce a continuous, wandlike effect: achene 1.2–1.4 mm. wide, 1.5–1.7 mm. long; gynophore of the achene thick and short: tubercle subulate, compressed; its base usually nearly covering the summit of the achene. PLATE 819, FIGS. 1A and 1B; MAP 2.—*R. glomerata* Vahl, Enum. ii. 234 (1806); Blake, RHODORA xx. 25, fig. 1 (1918); Fernald, RHODORA xxxvii. 401 (1935); Small, Man. 180 (1933). *Schoenus glomeratus* Linnaeus, Sp. Pl. i. 44 (1753). *R. paniculata* Gray, Ann. Lyc. N. Y. iii. 211, pl. 6, fig. 21 (1835), non Presl (1828). *R. glomerata* β *robustior* Kunth, Enum. ii. 296 (1837). *R. glomerata* var. *paniculata* (Gray) Chapman, Fl. So. U. S. 528 (1860); Britton, Trans. N. Y. Acad. Sci. xi. 88 (1892); Britton, Man. 185 (1901); Small, Fl. 195 (1903). Robinson & Fernald in Gray, Man. ed. 7: 201 (1908). *R. cymosa* Elliott, Sk. Bot. S. Car. and Ga. i. 58 (1816), non *Schoenus cymosus* Muhl. Cat., nomen nudum. *Phaeocephalum glomeratum* House, Am. Midland Nat. vi. 202 (1920). *Triodon glomeratus* [-a] Farwell, Rep. Mich. Acad. Sci. xv. 167 (1913).—Wet peaty or sandy soil, Delaware (one collection) and southeastern Virginia, southward along the Coastal Plain to northern Florida and west to eastern Texas; inland in the Appalachians of the Carolinas southward; scattered in Tennessee and northern Mississippi; fairly frequent along the drainage of the Arkansas, Red, and Sabine Rivers. The species is so definite that only representative specimens from western Louisiana and eastern Texas, where var. *typica* might be confused with the smaller var. *angusta*, are here cited. LOUISIANA: stream-bottom 6 miles south of Franklinton, Washington Parish, Brown, no. 6643 (La); open pineland, 1–2 miles north of Abita Springs, St. Tammany Parish, Pennell, no. 4133 (P); banks of Stoke Creek, 4 miles southeast of Harrisonburg, Catahoula Parish, Brown, no. 7383 (La); low wet soil along ditch, 1 mile south of Derry,

Natchitoches Parish, *Correll & Correll*, no. 9988 (D); Sodus, Sabine Parish, Sept. 1, 1883, *Letterman* (Mo); creek-bottom, 5 miles east of Ruston, Lincoln Parish, *Brown*, no. 6048 (La); margin of pond near Minden, Webster Parish, *Brown*, no. 5354 (La); meadow in pine hills near Mansfield, DeSoto Parish, *Brown*, no. 6093 (La); stream-bottom in long-leaf pine hills near Flatwoods, Rapides Parish, *Brown*, no. 6125 (La); in low prairies, Pointe aux Loups, Acadia Parish, Sept. 17, 1894, *Langlois* (CU); mixed pine-hardwoods west of Sulfur, Calcasieu Parish, *Brown, Nyland & Rogers*, no. 8593 (La). TEXAS: swamps east of Mineola, Wood Co., Aug. 13, 1902, *Reverchon* (Mo); 10 miles northeast of Gilmer, Upshur Co., *Cory*, no. 25659 (CU); swamps, Swan, Smith Co., Aug. 7, 1902, *Reverchon* (Mo); sandy bogs, Grapeland, Houston Co., *Palmer*, no. 14436 (Mo, US); $\frac{1}{2}$ mile east of Keechi, Leon Co., *Cory*, no. 25256 (CU); near Huntsville, Walker Co., July, 1913, *Young* (Mo); Livingston, Polk Co., *Palmer*, no. 6781 (Mo); Orange, Orange Co., Aug. 8, 1880, *Letterman* (Mo); Houston, Harris Co., July 20, 1919, *Fisher*, no. 45 (US).

4b. Var. **angusta**, var. nov. Cymis 3–6, subglomeratis, remotis: achaenio 1–1.1 mm. lato, 1.5–1.6 mm. longo, subgloboso, basi angusto, attenuato: tuberculo anguste subulato, basi quam achaenii apice valde angustiore, 1.3–1.8 mm. longo.—Low prairie, Arkansas (one collection), western Louisiana, and eastern Texas. ARKANSAS: Grand Prairie, Pulaski Co., *Harvey*, no. 7 (G) and same locality, July, *Harvey in Redfield Herb.*, no. 15190 (Mo). LOUISIANA: ditch in Holloway Prairie, Holloway, Rapides Parish, June 24, 1936, *Brown*, no. 6442 (La); common, low prairie, vicinity of Lake Charles, Calcasieu Parish, Aug. 25, 1898, *Mackenzie*, no. 442 (Mo, NC, NY); Lake Charles, Calcasieu Parish, Aug. 7, 1897, *Tracy* (G, US); 1839, *ex herb. Torrey* (G). TEXAS: 21 miles north of Deweyville, Newton Co., Oct. 4, 1934, *Cory*, no. 10866 (G); 2.6 miles east of Camp Jackson, Hardin Co., Sept. 13, 1936, *Cory*, no. 19711 (CU, G); Cypress City, Harris Co., *Boll*, no. 886 (G); brook banks, Hempstead, Waller Co., June 10, 1872, *Hall*, no. 718 (G, TYPE; Mo, US, ISOTYPES).

R. glomerata var. *angusta* possesses in common with var. *typica* a several-flowered spikelet maturing 1–3 achenes and terminated by a rudimentary floret. Its habit, however, is generally more robust; the leaves are 3–5 mm. wide, and the ultimate fascicles are densely aggregated to glomerulose. It is, however, on a basis of the achene that the varietal distinction chiefly rests. That of *R. glomerata* var. *typica* is broadly ovoid with a short, thick gynophore. The achene of var. *angusta*, however, is, as the name implies, narrower, somewhat shorter,

with a slender accentuated gynophore as in *R. microcephala*. Both varieties have in common the heavy wirelike margin, the prominent pale umbo and straplike retrorsely echinate setae.

The geographic range of the new variety impinges upon that of var. *typica* in Arkansas and Louisiana, but continues westward into eastern Texas.

5. *R. CAPITELLATA* (Michx.) Vahl. Caespitose: leaves 1.5–3.5 mm. wide, flat, short, smooth, slightly carinate, becoming minutely serrulate on the upper margins: culms erect, slender, obtusely triangular, smooth, 1.9–9.2 dm. tall: the terminal cyme composed of 1–several ultimate, turbinate (rarely globose) fascicles on short included branchlets; lateral fascicles 1–5 on subincluded peduncles: spikelets ovoid, 3.4–5 mm. long, sessile, 2–5-fruited (rarely 1-fruited and then terminated by a sterile floret): scales obtuse to acute, short-mucronulate, castaneous, swiftly caducous, often forced apart by the maturing achene: bristles 6, straplike, but weaker than those of *R. glomerata*, with retrorse barbules dwindling toward the base; tips convergent around the tubercle which they fail to equal or but slightly exceed: achene pyriform, 0.9–1.2 mm. wide, 1.3–1.8 mm. long, lenticular, plump, without a prominent umbo, edged by a narrow wirelike margin; the brown surface at maturity entirely or nearly uniform in coloring, smooth, lustrous: tubercle compressed-subulate, pale, 0.9–1.6 mm. long; its base widening nearly to cover the summit of the achene. PLATE 819, FIGS. 3A and 3B; MAP 1.—Enum. ii. 235 (1806); Blake, RHODORA, xx. 27 (1918); Small, Man. 180 (1933). *Schoenus capitellatus* Michaux, Fl. Bor.-Am. i. 36 (1803), in part. *R. capitellata* var. *minor* (Britt.) Blake, RHODORA, xx. 28, fig. 2 (1918). *R. capitellata* var. *leptocarpa* (Chapman) Blake, RHODORA, xx. 28, fig. 5 (1918). *R. glomerata* sensu Gray, Gram. et Cyp. i. no. 94 (1834) and Ann. Lyc. N. Y. iii. 217, pl. 6, fig. 29 (1835), and later authors up to 1918, non (L.) Vahl; Chapman, Fl. So. U. S.: 527 (1860); Britton, Man. 185 (1901); Robinson & Fernald in Gray, Man. ed. 7: 201, fig. 326 (1908); Victorin, Fl. Laurent. 689, fig. 248 (1935). *R. glomerata* var. *minor* Britton, Trans. N. Y. Acad. Sci. xi. 89 (1892); Britton, Man. 185 (1901); Fernald, RHODORA, xxxvii. 402 (1935). *R. glomerata* var. *leptocarpa* Chapman ex Britton, Trans. N. Y. Acad. Sci. xi. 88 (1892); Fernald, RHODORA, xxxvii. 401, 402 (1935). *R. leptocarpa* (Chapm.) Small, Man. 181, 1503 (1933). *Phaeocephalum glomeratum* var. *minus* Farwell, Rep. Mich. Acad. Sci. xxi. 361 (1920).—Common on lake-shores, river-banks and boggy places of southern Nova Scotia and New England (excepting northernmost Maine and Upper Vermont), thence southward on the Coastal Plain to North

Carolina; inland to the vicinity of the Great Lakes and along the Blue Ridge and Alleghanies from Maryland to Georgia; less common throughout western Tennessee and Missouri, with scattered stations in lower Georgia, northwestern Florida, Alabama, Mississippi, Arkansas, and eastern Texas; re-occurring in the coastal ranges of northern California and southern Oregon. The citation of specimens of this common, well-known species is limited to those from the extremities of its range. NEW BRUNSWICK: ledges by Miramichi River, Northumberland Co., *Fernald & Weatherby*, no. 2408 (G); damp shores below Oakiok, York Co., *Brittain*, no. 11 (G). MAINE: St. Francis, Aroostook Co., 1881, *Furbish* (NE). CAROLINA: 1794, Michaux Herb. (G, TYPE-PHOTO of *Schoenus capitellatus*). GEORGIA: low wet woods along small stream, near Thomasville, Thomas Co., *Correll*, no. 6484A (D); wet woods near Whigham, Decatur Co., *Harper*, no. 1185 (NY, US); in the canyon at Tallulah Falls, Rabun Co., alt. 1600 ft., Aug. 3, 1893, *Small* (NY); densely shaded sphagnum pockets in a swamp, Sylvester, Worth Co., *Svenson*, no. 6928 (G). FLORIDA: Quincy, Gadsden Co. (G, no collector designated but handwriting that of John Carey); swamp near De Funiak Springs, Walton Co., *Curtiss*, no. 5926 (G, NC, NY). ALABAMA: moist sandy soil, DeSoto Falls, Jefferson Co., *Ruth*, no. 127 (NY). ONTARIO: marshy places, Moon River, Muskoka, July 1882, *Burgess* (G); au bord d'un petit lac, Timagami Park, *Victorin, Germain & Meilleur*, no. 45386 (G); Sandwich, *Macoun*, no. 25338 (G, NY, US). KENTUCKY: near Harlan Court House, Harlan Co., *Kearney*, no. 24 (G); wet flats of Red River, Logan Co., Aug. 1, (?), *Short* (P); wet flat on Ky. 98, Marshall Co., *Braun*, no. 4173 (G). TENNESSEE: gravelly oak woods, 6 miles east of Crossville, Cumberland Co., *Svenson*, no. 4171 (G, P); wet roadside depression, Jamestown, Fentress Co., *Svenson*, no. 4104 (G); bog, South Indian Creek, Unicoi Co., *Price*, no. 980 (D); low ponds at Thompson's, Williamson Co., *Ruth*, no. 713 (NC, NY); dry oak woods, Lawrenceburg, Lawrence Co., *Svenson*, no. 4298 (G); along road in swamp, about 1.5 miles southeast of Hollow Rock Junction, Carroll Co., *Svenson*, no. 425 (G, US); ditches, Henderson, Chester Co., *Bain*, no. 245 (G). MISSISSIPPI: Saratoga, Simpson Co., *Tracy*, no. 8616 (G, NY). WISCONSIN: damp sandy shore of Crooked Lake, Siren, Burnett Co., *Fassett*, no. 7457 (G, f. *discutiens*); moist meadow, Marquette, Green Lake Co., *Hotchkiss & Martin*, no. 4407 (US); Arena, Iowa Co., July 27, 1922, *Davis* (G, f. *discutiens*). ARKANSAS: Benton Co., *Plank* (Mo; NY, no. 5); Fayetteville, 1879, *Harvey* (G). LOUISIANA: New Orleans, *Ingalls* (NY, designated as *R. glomerata* in Gray's handwriting and cited as such by Gray). OKLAHOMA: wet open ground, Antlers, Pushtamaha Co., *Palmer*, no. 9004 (CA, Mo, P). TEXAS: Swan, Smith Co., *Reverchon*, no.

2917 (Mo). CALIFORNIA: near Trinity Center, Trinity Co., Howell, no. 12845 (CA, G); Pitkin Marsh, 5 miles north of Sebastopol, Sonoma Co., Howell, no. 12677 (CA, in part f. *discutiens*; G, entirely f. *discutiens*). OREGON: sphagnum bog, Brookings, Curry Co., Peck, no. 8793 (NY).

In a recent paper Pfeiffer¹ appropriates the name *R. capitellata* (Michx.) Vahl for the common tropical and subtropical species of the Western Hemisphere which has heretofore been known as *R. glauca* Vahl. Since the name-bringing synonym, *Schoenus capitellatus* Michx., has been generally listed by American botanists, following the precedent of Torrey and Gray, in the synonymy of a widely spread and common species of the Series *Albae*, it is necessary to review the available information concerning the authentic material of *S. capitellatus* in the Michaux Herbarium.

According to notes made by M. Gadaceau of the Paris Herbarium and quoted by Blake² in 1918, the Michaux Herbarium contains two sheets with the label, *Schoenus capitellatus*. On one of these are mounted specimens of *R. Grayii* Kunth (*R. Elliottii* Gray non Dietr.) and of the species mentioned above as belonging to the Series *Albae*. The Gray Herbarium has a photograph of this sheet, and the two specimens of *R. Grayii*, designated as A and B, can be plainly seen, one on either side of the centrally placed subcapitate plant with inflorescence labeled C. The original label with the name, "*Schoenus capitellatus*" and the data "Hab. in Carolina" is affixed to the righthand side of the sheet and two slips of paper bearing Gray's annotations "*R. Elliottii* Gray" and "*R. glomerata*" (the name wrongly applied by Gray and later botanists up to 1918 to the species here recognized as *R. capitellata* (Michx.) Vahl) are mounted in the opposite corner. Of the second sheet M. Gadaceau writes, "L'autre offre quatre beaux echantillons du *R. glauca* Vahl." He then continues with remarks on the various Michaux specimens from the Richard Herbarium. To this herbarium belongs a sheet of *Schoenus capitellatus*, as labeled by Michaux, which has been referred by A. Richard to *R. glauca* Vahl.

Pfeiffer apparently has not seen either the paper by Blake or the decisive specimens in the Michaux Herbarium; for neither are

¹ Fedde, Rep. Spec. Nov. xlix. 75 (1940).

² RHODORA, xx. 26 (1918).

mentioned in his article. He does state, however, that authors prior to Boeckeler (especially Kunth) were cognizant of the relationship of *Schoenus capitellatus* to *R. glauca*. This statement, although incorrect in so far as it includes Torrey and Gray, both of whom identified *S. capitellatus* with plant C mentioned above, does indicate the probable source of Pfeiffer's synonymy. He is apparently only taking over the synonymy of *R. glauca* as given by the older European botanists and interpreting it in the light of the present International Rules of Nomenclature. Such an explanation also accounts for Pfeiffer's inclusion of the basonym, *Schoenus fascicularis* Michx., of another well-known American species, *R. fascicularis* (Michx.) Vahl, in the synonymy of *R. capitellata*; for it is so placed by Kunth¹. Undoubtedly the treatment by the earlier European botanists of *R. glauca* as a synonym of *R. capitellata* was the result of the inclusion of the specimens which were later identified as *R. glauca* Vahl under the name of *Schoenus capitellatus* in the Michaux Herbarium. However, viewed in conjunction with the original description of *S. capitellatus* in Michaux's *Flora Boreali-Americana*², there can be within the mixture of *R. Grayii* Kunth, *R. glauca* Vahl (?) and plant C of the Series *Albae* only one possible correct application of the name *Schoenus capitellatus*; for Michaux states that the specimen under consideration has "Capitula breviter pedunculata, interdum geminata: semen compresso-obovatum" and "setulae retrorsum muricatulae." The habitat he gives as Carolina. Of the three species mentioned above *R. glauca* is eliminated at once by its range; for it is unknown in the United States. Nor does it have retrorsely barbed bristles. It is possible that the specimens of *R. Grayii* had a part in the more generalized portions of Michaux's descriptions, but that they could not have been of sole consideration is evidenced in the portions of the description quoted above. The peduncles of the axillary "capitula" of *R. Grayii* are exerted and attenuated, the achene is conspicuously swollen above, and, as in *R. glauca*, the bristles are upwardly hispidulous. Following the precedent established by Blake, I am, therefore, applying the name *R. capitellata* (Michx.) Vahl to the species

¹ Enum. ii. 297 (1837).

² Fl. Bor.-Am. i. 36 (1803).

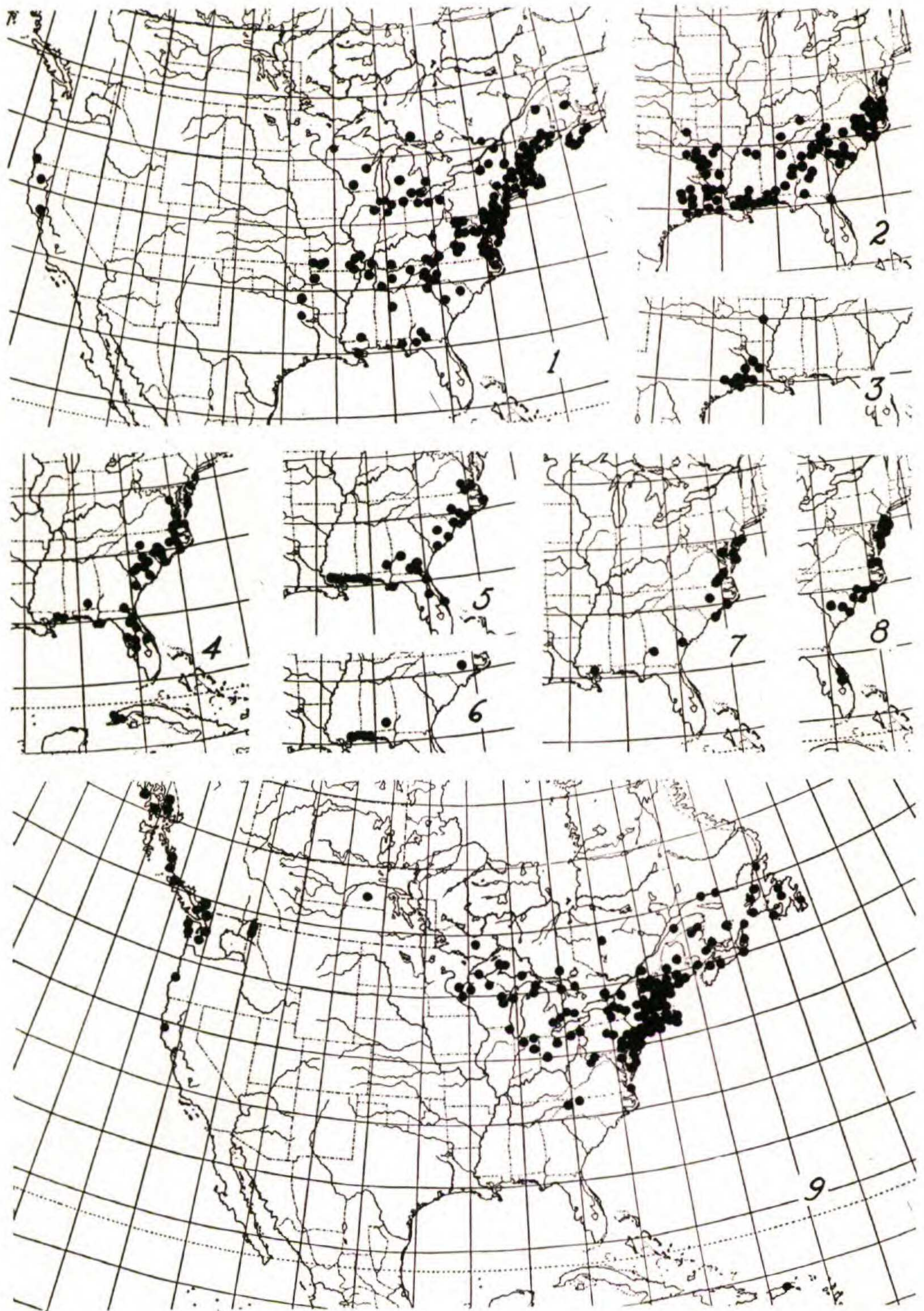
aforementioned as of the Series *Albae* which is typified by specimen C of the sheets labeled *Schoenus capitellatus* in the Michaux Herbarium.

Forma **controversa** (Blake), comb. nov. Bristles antrorsely serrulate.—Var. *controversa* Blake, RHODORA, xx. 28, fig. 3 (1918). *R. glomerata* var. *minor* f. *controversa* (Blake) Fernald, RHODORA, xxxvii. 402 (1935). *R. Smallii* Britton ex Small, Fl. 1321, 1327 (1903) and Man. 182 (1933).—Occurs infrequently throughout the range of the typical *R. capitellata*, with the exception of the southern states.

Forma **discutiens** (Clarke), comb. nov. Bristles smooth.—*R. glomerata* var. *discutiens* Clarke ex Britton, Trans. N. Y. Acad. Sci. xi. 89 (1892); Britton, Man. 185 (1901); Small, Fl. 195 (1903); Robinson & Fernald in Gray, Man. ed. 7: 201 (1908). *R. capitellata* var. *discutiens* (Clarke) Blake, RHODORA, xx. 28, fig. 4 (1918). *R. glomerata* var. *minor* f. *discutiens* (Clarke) Fernald, RHODORA, xxxvii. 402 (1935).—Occurs sporadically throughout the range of the typical *R. capitellata* with the exception of the southern states.

In 1933 Britton elevated the specimens of *R. capitellata* with antrorsely barbed bristles to specific rank under the name, *R. Smallii*. However, the antrorsely barbed phase of *R. cephalantha*, which has been generally known since the publication of Asa Gray's Monograph in 1835, has never received nomenclatorial recognition. Smooth-bristled specimens have been found in *R. capitellata* and *R. capillacea*, and have been generally treated as varieties. The first has its var. *discutiens*, made by Clarke in 1892 under *R. glomerata*, and transferred by Blake in 1918 to *R. capitellata*; the second, its var. *leviseta* E. J. Hill, 1876.

In 1935, with a view toward establishing uniformity in the treatment of these similar cases, Fernald discussed the significance of both the variation in direction, and the failure altogether, of barbing in the bristles. He points out that in *R. capillacea* the smooth-bristled state occurs sporadically throughout the wide range of that species. In *R. capitellata* (*glomerata* var. *minor*), as in *Eleocharis* and *Scirpus*, plants from the same locality have retrorsely or antrorsely barbed or even smooth bristles. Consequently he concludes that the atypical specimens are most adequately and satisfactorily covered as forms. I am accepting *R. capillacea*, f. *leviseta* (Hill) Fernald and following his precedent as to category in making the new combinations for



Range of 1, *RHYNCHOSPORA CAPITELLATA*; 2, *R. GLOMERATA*, var. *TYPICA*; 3, *R. GLOMERATA*, var. *ANGUSTA*; 4, *R. MICROCEPHALA*; 5, *R. CEPHALANTHA*, var. *PLEIOCEPHALA*; 6, *R. CEPHALANTHA*, var. *ATTENUATA*; 7, *R. CEPHALANTHA*, var. *TYPICA*; 8, *R. CHALAROCEPHALA*; 9, *R. ALBA*

both f. *discutiens* and f. *controversa* under *R. capitellata*. *R. cephalantha* var. *typica* f. *antrorsa* and var. *pleiocephala* f. *controversa* bring into line the hitherto neglected phases of that species.

6. *R. ALBA* (L.) Vahl. Caespitose, often densely so: leaves slenderly linear, 0.5–2.5 mm. wide, flat, becoming slightly carinate and then obscurely setaceous on keel and margins: culms slender, erect, triquetrous, 0.7–7 dm. high: fascicles 1–3, turbinate, 0.7–1.6 cm. wide; the smaller lateral fascicles exerted on slender, erect peduncles: spikelets ovoid, 3.5–5 mm. long, 2– (rarely) 3-flowered, often maturing 2 achenes, but if 1-fruited the spikelet terminated by an immature floret: fertile scales characteristically whitish to pale rufous, mucronate: bristles 10–12, stiffly connivent, obviously arranged in 2 series on the elongated stipe, retrorsely barbed, sparingly villous at the base, falling short of or exceeding the tubercle: achene pyriform, lenticular, biconvex, obscurely margined, with a prominent pale disc, irregularly lined, then generally darker toward the margins and faintly rugulose, 0.9–1.2 mm. wide, 1.6–1.8 (rarely–2) mm. long: tubercle attenuate-subulate, compressed, 0.6–1.2 mm. long; the narrow base not equalling the breadth of the summit of the achene. PLATE 819, FIGS. 4A and 4B; MAP 9.—Enum. ii. 236 (1806); Elliott, Sk. Bot. S. Car. and Ga. i. 57 (1816); Gray, Gram. et Cyp. i. no. 92 (1834) and Ann. Lyc. N. Y. iii. 213, pl. 6, fig. 24 (1835); Boeckeler, Linnaea, xxxvii. 570 (1873); Britton & Brown, Ill. Fl. i. 277, fig. 651 (1896), in part *R. macra* (Clarke) Small; Clarke in Urban, Symb. Ant. ii. 124 (1900); Britton, Man. 185 (1901), *R. macra* (Britt.) Small as to specimens from Florida; Robinson & Fernald in Gray, Man. ed. 7: 200, fig. 323 (1908); Small, Fl. 194 (1903) and Man. 180 (1933); M. L. Green, List of Standard Species of Nom. Conserv. 9, no. 492 (1926), mimeographed; Victorin, Fl. Laurent. 689, fig. 248 (1935); Fernald, RHODORA, xlv. 371 (1942). *Schoenus albus* Linnaeus, Sp. Pl. i. 44 (1753); Fl. Danica ii. 5, pl. 320 (1766); Michaux, Fl. Bor.-Am. i. 34 (1803). *R. alba* var. *macra* sensu Robinson & Fernald in Gray, Man. ed. 7: 201 (1908), non Clarke. *R. luquillensis* Britton, Bull. Torr. Bot. Cl. 1. 56 (1923); Britton & Wilson, Sci. Surv. Porto Rico and Virgin Isl. v. 103 (1923). *Triodon albus* Farwell, Rep. Mich. Acad. Sci. xix. 253 (1917). *Phaeocephalum album* House, Am. Midland Nat. vi. 201 (1920). *Dichromena alba* Macbride, Field Mus. Pub. Bot. iv. 166 (1929).—Common in open sphagnum bogs from Newfoundland to Maryland, rare in Virginia, southward only in scattered mountain bogs of West Virginia, North Carolina and Puerto Rico; inland to the area of the Great Lakes and Saskatchewan (one collection), reappearing to the west in northern Idaho and along the Pacific coast from

northern California to southern Alaska; also in northern Eurasia. The citation of specimens of this well known and clearly defined species is limited to those from the outlying portions of its range. QUEBEC: openings in marly Arbor Vitae swamp, mouth of Bonaventure River, Bonaventure Co., *Collins, Fernald & Pease*, no. 5819 (G); open peaty spots in larch swamp, Grindstone, Grindstone Island, *Fernald, Long, & St. John*, no. 7015 (G, P); dans les tourbières, Isle à la Proie, Archipel de Mingan, *Victorin*, no. 20225 (G); Father Point, *Williamson*, no. 1090 (P); in peat bogs, St. Hubert, Chambly Co., July, 1910, *Victorin* (US); tourbière flottante, 93 miles au nord de Mont-Laurier, route Mont-Laurier, Senneterre, *Marie-Victorin, Rolland-Germain & Blain*, no. 309 (G). DELAWARE: New Castle, New Castle Co., *Tatnall* (G); swamps near Laurel, Sussex Co., Aug. 19, 1880, *Commons* (P). MARYLAND: 4 miles north of Salisbury, Wicomico Co., *Shreve & Jones*, no. 1278 (US); peat bog, Glenburnie, Anne Arundel Co., Aug. 19, 1905, *Chrysler* (G); Suitland Bog, Prince George Co., *C. P. Smith*, no. 3192 (CA); open white gravel bog, Powder Mill Bogs, near Lewiston, Prince George Co., *Blake*, no. 10671 (G); sphagnous bog, northwest of Mountain Lake Park and vicinity, Garrett Co., on the Alleghany Plateau, alt. 720 m., *Steele*, no. 77 (US). VIRGINIA: wooded swamp of North Landing River, west of Pungo Ferry, Princess Anne Co., *Fernald & Long*, no. 13899 (G). WEST VIRGINIA: Aurora and vicinity, Preston Co., alt. about 3000 ft., Aug. 15–Sept., *Steele & Steele* (NY, US). NORTH CAROLINA: roadside between Sparta and Roaring Gap, Alleghany Co., *Blomquist*, no. 5612 (D). SASKATCHEWAN: bog, Dahlen, Aug. 9, 1936, *Breitung* (NY). IDAHO: Priest Lake, Bonner Co., *Piper*, no. 3756 (G, US); Minard's Bay, Bonner Co., Priest Lake, alt. 660 m., *MacDougal*, no. 294 (NY). CALIFORNIA: Inglenook Swamp, Mendocino Co., *Congdon*, no. 67092 (G, US). OREGON: *Hall*, no. 568 (G); bog near Florence, Roosevelt Highway, Lane Co., *Henderson*, no. 13978 (P). WASHINGTON: in quaking sphagnum bog, Fazon Lake, Whatcom Co., *Muenschler*, no. 10145 (G); in floating bogs in Samish Lake, Whatcom Co., *Suksdorf*, no. 1014 (G, NY, US); bogs, rare, Seattle, King Co., *Piper*, no. 1121 (G, NY); in sphagnum bog, 28 miles south of Tacoma on Mt. Rainier Road, Pierce Co., *Abrams*, no. 9232 (NY); Wreck Creek Prairie near Granville, Chehalis Co., *Howell*, no. 374 (NY, P, US); bog, edge of ditch, Onslow Station, N. P. R.R., 20 miles northwest of Hoquiam, Grays Harbor Co., *Foster*, no. 870 (US); bogs, Moclips, Grays Harbor Co., *Cowles*, no. 619 (G, Mo); in damp meadows of Baker Prairies, Grays Harbor Co., *McGee*, no. 556 (CA). BRITISH COLUMBIA: Fort Rupert, Vancouver Island, 1904, *Hunt* (NY); Vancouver, Aug. 28, 1893, *Macoun* (US); meadows, boggy and rocky, of northwest part of Calvert Island, south of Kwatshua, *McCabe*, no. 3083

(G); muskegs in sphagnum in wet places, borders of ponds, Smyth Island, Bardswell Group, *McCabe*, no. 3184 (G). ALASKA: sphagnum bog, Wrangell, *Walker & Walker*, no. 728 (G); Sanitarium, *Anderson*, no. 290 (US, immature); bog, Ketchikan, *Cowles*, no. 1408 (US); vicinity of Loring, summer, 1903, *Chamberlain* (US, immature); in marshes near Yes Bay, *Howell*, no. 1683 (NY, US, immature); upland meadows, Back Bay, *Gorman*, no. 122 (NY, US, immature); marshy margin of lake, Prince of Wales Island, *Walker & Walker*, no. 904 (CU, G, NY, US). PUERTO RICO: rocks, summit of El Yunque, alt. 1050 m., *Gleason & Cook*, no. X-86 (NY) and *Britton & Bruner*, no. 7626 (NY); Sierra Luquillo, *Hioram*, no. 364 (NY, TYPE of *R. luquillensis*; US, ISOTYPE).

Britton's *R. luquillensis* from the eastern mountains of Puerto Rico is morphologically inseparable from phases of *R. alba*. In general appearance it closely resembles the short, thickly caespitose specimens of *R. alba* collected on the Newfoundland tablelands. *Gleason & Cook*, no. X-86 is especially similar to *Fernald & Wiegand*, no. 2753. Also the spikelets of the Puerto Rican material, like those of the continental *R. alba*, are 1-3-fruited and usually (if 1-fruited, invariably) terminated by a sterile floret; and the achenes are identical with those of *R. alba* in all particulars.

Pfeiffer¹ has published *R. alba* var. *meridianus*, based on specimens collected by Lützelburg in northeastern Brazil. He states in the description that the bristles are 6-8, which seems to indicate that his plants vary, at least in this respect, from the typical. Unfortunately, I have not seen any of his material, for it would be interesting to compare it with the specimens from Puerto Rico.

Forma **laeviseta**, f. nov. Setis praeter basem sparse plumosam laevibus.—Occurs commonly with the typical form in Newfoundland; less commonly in eastern Quebec and Nova Scotia; infrequent in Pennsylvania, the vicinity of the Great Lakes and British Columbia. NEWFOUNDLAND: wet depressions and borders of rills on peaty slopes, Great Barachois (or Barasway Bay), District of Burgeo and La Poile, Sept. 11, 1926, *Fernald, Long & Fogg*, no. 119 (G); bare spots on peaty and gravelly slopes, French (or Tweed) Island, Bay of Islands, Sept. 2, 1926, *Fernald, Long & Fogg*, no. 118 (G, TYPE); wet bog-barrens, Trepassey, Avalon Peninsula, Aug. 16, 1924, *Fernald, Long & Dunbar*, no. 26344 (G); shallow pond-holes in tundra west of

¹ Fedde, Rep. Spec. Nov. xxxiii. 210 (1933).

Rushy Pond, Valley of Exploits River, Aug. 28, 1911, *Fernald & Wiegand*, no. 4718 (G); heath on diorite tableland, Lookout Mt., Bonne Bay, alt. about 380 m., Aug. 26, 1910, *Fernald & Wiegand*, no. 2753 (G); marsh west of Force le Plain pool, Harry's Brook, Aug. 9, 1929, *R. B. Kennedy*, no. 71072 (G); patches of damp peat with *Utricularia*, Middle Ridge, July 26, 1937, *Moir*, no. 41 (G). MIQUELON: maricages, tourbière près du pont de Miquelon, July 31, 1901, *Arsène*, no. 98 (G). QUEBEC: dans la grande tourbière, Saint Charles de Bellechasse, Aug. 11, 1925, *Rousseau*, no. 20224 (G); sphagnum swamp, Natashquan, Saguenay Co., Sept. 4, 1915, *St. John*, no. 90201 (G). NOVA SCOTIA: sphagnous pockets in sandy plains, Middleton, Annapolis Co., July 20, 1920, *Bean & White*, no. 20267 (G). PENNSYLVANIA: vicinity of Allentown, Lehigh Co., *Pretz*, no. 7793 (P); open (calcareous) marshy meadow, vicinity of Allentown, Lehigh Co., *Pretz*, no. 10361 (P). WISCONSIN: Oneida Reservation, July 12, 1881, *Schuette* (G). BRITISH COLUMBIA: Lulu Island, Aug. 11, 1938, *Eastham* (NY).

7. *R. MACRA* (Clarke) Small. Caespitose: leaves 1.5–3.5 mm. wide, flat, ascending; upper margins serrulate: culms erect, slender, acutely trigonous, 3.9–7.2 dm. high: terminal fascicle turbinate to corymbiform, 1.3–3 cm. wide; 1–2 lateral fascicles smaller, on slender exserted peduncles: spikelets ovoid, 4–5 mm. long, invariably 1-flowered, with the achene terminating the axis: scales mucronulate, rusty: bristles 18–20, obviously arranged in at least two series, connivent, exceeding the tubercle; the barbs of the distal portion retrorse, reversing their direction in the proximal half, and lengthened into a few hairs at the base: achene pyriform, lenticular, 1.3–1.4 mm. wide, 2–2.1 mm. long; the base somewhat attenuate as in *R. alba*; the surface obscurely rugulose, pale over the umbonal region, irregularly lined, then generally darkened toward the margins: tubercle narrowly subulate, compressed, 1 mm. long; the base not including the summit of the achene. PLATE 820, FIGS. 3A and 3B; MAP 12.—*Man.* 180 (1933). *R. alba* var. *macra* Clarke ex Britton, *Trans. N. Y. Acad. Sci.* xi. 88 (1892); Small, *Fl.* 194 (1903). *R. alba* sensu Chapman, *Fl. So. U. S.* 527 (1860), in part, non Vahl. *Triodon albus* Farwell, var. *macer* Farwell, *Rep. Mich. Acad. Sci.* xix. 253 (1917). *Phaeocephalum album* House var. *macrum* Farwell, *Rep. Mich. Acad. Sci.* xxi. 361 (1920).—Bogs of Coastal Plain from Georgia west to eastern Texas. GEORGIA: wet sloping bog, Coffee Co., *Harper*, no. 716 (G, NY). FLORIDA: Liberty Co., Aug. 1886, *Curtiss* (US); wet springy places, Apalachicola, Franklin Co., *Chapman in Biltmore Herb.*, no. 861a (G, US); "*Rhyn. alba* with many bristles," *Chapman* (G). MISSISSIPPI: Biloxi, Harrison Co., *Tracy*, no. 4886 (NY, US); Mississippi City, Harrison Co., *Lloyd & Tracy*, no. 380 (NY).

TEXAS: sandy bogs, Grapeland, Houston Co., *Palmer*, no. 14404 (Mo) and no. 12844 (Mo); 2 miles south of Grapeland, Houston Co., *Cory*, no. 26080 (CU); *Drummond*, no. 281 (NY, ISOTYPE, immature).

This species, known only from Georgia, Florida, Mississippi and Texas,¹ was set off from *R. alba* Vahl by Clarke. He described it as having "clusters larger, sometimes 3 mm. broad, bristles more numerous 15–20." In 1933 Small elevated *R. alba* var. *macra* Clarke to specific rank without adding anything of note to the original description. On examination, however, the spikelets of *R. macra* prove to differ from those of *R. alba* in several characters. In the former species each spikelet is invariably 1-flowered so that the single maturing achene terminates the axis. In *R. alba*, on the contrary, each spikelet is 2- (more rarely) 3-flowered. Commonly two achenes mature, the uppermost of which may or may not terminate the axis, depending upon the presence or absence of a third almost invariably sterile floret. If the spikelet is 1-fruited, however, the achene is always succeeded by a sterile floret. It is the presence in *R. macra* of a consistently 1-flowered spikelet, coupled with its generally grosser habit, its increased number of bristles, and larger achene that leads me to agree with Small in thinking it to be a good species.

8. *R. KNIESKERNII* Carey. Caespitose: leaves filiform-setaceous to 1.8 mm. wide, involute when dry, smooth, becoming serrulate on margins and keel: culm slender to filiform, flexuous, 1.5–5 dm. high: terminal fascicle 0.4–1 cm. wide; 2–3 lateral fascicles remote at intervals along the entire length of the culm, with peduncles included: spikelets ovoid, 2–2.8 mm. long, subsessile, 2–3-fruited, terminated by a sterile floret: scales caducous, castaneous to dark brown; lower scales apiculate, upper ones slightly so: bristles 6, stiffly erect, retrorsely barbellate, falling short of to barely exceeding the body of the achene: achene obovoid, 0.6–0.8 mm. wide, 1.1–1.3 mm. long, lenticular, biconvex, nearly imperceptibly rugulose, a shining yellow-brown in the center, becoming fragmentarily lined, then generally darker toward the margins: tubercle deltoid-subulate, compressed, 0.4–0.6 mm. high. PLATE 819, FIGS. 2A and 2B; MAP 11.—*Am. Journ. Sci. Ser. 2: iv. 25* (1847); *Gray, Man. 533* (1848); *Britton & Brown, Ill. Fl. i. 278, fig. 653* (1896); *Britton, Man. 185* (1901); *Robinson & Fernald in Gray, Man. ed. 7: 201, fig. 325* (1908). *R. Grayana* Knieskern ex Carey, *Am. Journ.*

¹ Reports of *R. macra* from New England are erroneous, being founded on specimens of *R. alba* exhibiting gigantism.

Sci. Ser. 2: iv. 25 (1847), as synonym, non *R. Grayii* Kunth. *Phaeocephalum Knieskernii* (misspelled *Kneiskernii*) House, Am. Midland Nat. vi. 202 (1920).—Moist places in pine barrens of New Jersey and Delaware. NEW JERSEY: Point Hollow, 1843, *Knieskern* (NY, TYPE, annotated by Carey); pine woods, Shark River, Monmouth Co., *Mackenzie*, no. 8003 (NY, P); (on bog iron ore?) sandy bogs southeast of Bombat, Ocean Co., Aug. 25, 1909, *Long* (G, P); dominant on iron ore banks near Atsion, Burlington Co., Aug. 26, 1867, *Parker*, (G, P); moist humus, Parkdale, Camden Co., *Pennell*, no. 9030 (NY); pinelands, Egg Harbor City, Atlantic Co., *Mackenzie*, no. 8050 (NY). DELAWARE: swamps, Baltimore Hundred, Sussex Co., Sept. 10, 1875, *Commons* (P); swamp, near Gumboro, Sussex Co., Aug. 5, 1874, *Commons* (P).

First distributed under the herbarium-name, *R. Grayana* Knieskern, this rare little species of the New Jersey and Delaware pine barrens was later described and published by Carey in 1847 as *R. Knieskernii*, the change in name being made because of *R. Grayii* of Kunth, 1839.

9. *R. CAPILLACEA* Torr. Caespitose: leaves filiform-setaceous, involute, at least on drying, becoming slightly carinate then serrulate on keel and margins: culms flexuous-erect, capillary, 0.9–4 dm. high: fascicles ovoid, erect with 1–10-spikelets, 3–8 mm. wide; the single lateral fascicle remote on a subincluded peduncle: spikelets lanceolate to fusiform, 5–6 mm. long, erect, sessile or nearly so, 1–5-fruited: fertile scales castaneous to dark brown with the prominent midrib prolonged into a short mucro: bristles 6, erect to ascending, retrorsely barbellate, falling short of to exceeding the tubercle: achene 0.8–1 mm. wide, 1.8–2 mm. long, oblong-elliptic, lenticular, with a very narrow gynophore, obscurely rugulose, the central region pale, irregularly lined, then generally darkened toward the margins: tubercle compressed, attenuate-subulate, 0.8–1.6 mm. tall. PLATE 818, FIGS. 2A and 2B; MAP 10.—Fl. N. and Mid. St. i. 55 (1823) and Ann. Lyc. N. Y. iii. 366 (1836); Gray, Gram. et Cyp. i. no. 95 (1834) and Ann. Lyc. N. Y. iii. 214, pl. 6, fig. 25 (1835) and Man. 533 (1848); Britton & Brown, Ill. Fl. i. 278, fig. 652 (1896); Britton, Man. 185 (1901); Robinson & Fernald in Gray, Man. ed 7: 201, fig. 324 (1908). *R. setacea* (Muhl.) MacMillan, Metasp. Minn. Valley, 104 (1892), non Vahl. *Schoenus setaceus* Muhlenberg, Descrip. Gram. 6 (1817), non Vahl. *Triodon capillaceus* [a] Farwell, Rep. Mich. Acad. Sci. xv. 167 (1913). *Phaeocephalum capillaceum* Farwell, Rep. Mich. Acad. Sci. xxi. 361 (1920).—Sporadic in marly bogs and on calcareous ledges from the western coast of Newfoundland through southern Pennsyl-

vania; more common inland in the region of the Great Lakes (excepting Lake Superior), south through Ohio, with scattered stations in western Virginia, Tennessee, northern Iowa, northern North Dakota, and Saskatchewan, and a concentration in southeastern Missouri. Cited specimens of this clear-cut species are limited to those from the extremities of the range. NEWFOUNDLAND: in bogs, Bonne Bay, July 26, 1930, *Jansson* (G, f. *leviseta*); Harry's Brook near Dump Pool, *R. B. Kennedy*, no. 920 (G, f. *leviseta*). QUEBEC: open spots, marly Arbor Vitae swamps, mouth of Bonaventure River, Bonaventure Co., *Collins, Fernald & Pease*, no. 4774 (G). NEW BRUNSWICK: crevices of wet calcareous ledges, Gorge of Aroostook River, Victoria Co., *Robinson & Fernald* in Pl. Exsic. Gray., no. 44 (CA, CU, G, NE, NY, P, US). MAINE: calcareous ledges, Ft. Fairfield (above mouth of Aroostook River), Aroostook Co., July 11, 1893, *Fernald* (NE); ledgy river bank, Winslow, Kennebec Co., *Fernald*, no. 2785 (NE, f. *leviseta*). VERMONT: 4th of July Slide, Mt. Willoughby, Orleans Co., Aug. 15, 1896, *Faxon* (NE, NY, US). CONNECTICUT: border of pond, Salisbury, Aug. 28, 1910, *Phelps* (G, NE). NEW YORK: Watertown, Jefferson Co., 1834, *Gray* (NY, cited by Gray). NEW JERSEY: limestone sink, White Pond, Sussex Co., *Mackenzie*, no. 4766 (NY); marl beach, White Pond, Warren Co., *Griscom*, no. 12120 (G). PENNSYLVANIA: one mile east of Johnsonville, Northampton Co., Sept. 2, 1907, *Van Pelt* (G, P); in limestone, Dillerville Swamp, Lancaster Co., July 16, 1901, *Heller* (G; US, no. 4839). VIRGINIA: boggy meadow fed by springs in limestone area, vicinity of Watauga, Washington Co., *Carr*, no. 585 (Penn.) OHIO: cedar swamp, Champaign Co., *Werner*, no. 170½ (NY); rather abundant in bog, Cedar Swamp, vicinity of Tremont City, Clark Co., *Leonard*, no. 2090 (US); Paxton, Ross Co., Aug. 1933, *Pontius & Bartley* (US). TENNESSEE: dolomitic limestone, Cedar Creek, Campbell Co., *Underwood*, no. 163 (CU). IOWA: bog, Estherville, Emmet Co., *Walden*, no. 1113 (G); marshy zone around springs emerging from a knoll 5 miles east of Ruthven south of the viaduct over Highway 18, Highland, Palo Alto Co., *A. Hayden*, no. 742 (G, P); abundant, forming a zone around a hanging bog, southwest of Silver Lake, Silver Lake, Dickinson Co., *A. Hayden*, no. 10886 (P); marshy plain in a hanging bog, Logan, Clay Co., *A. Hayden*, no. 8040 (NY). NORTH DAKOTA: Turtle Mts., Bottineau, Bottineau Co., alt. 2000 ft. July 25, 1896, *Barber* (US). SASKATCHEWAN: bog, rare, 4 miles southwest of Wallwort, *Breitung*, no. 1373 (G).

Forma LEVISETA (E. J. Hill) Fernald. Bristles smooth, otherwise identical with *R. capillacea*.¹—RHODORA, xxxvii. 252 (1935).

¹ For discussion see treatment of *R. capitellata* f. *discutiens*.

Var. *leviseta* E. J. Hill ex Gray, Am. Nat. x. 370 (1876); Britton & Brown, Ill. Fl. 278 (1896); Britton, Man. 185 (1901); Robinson & Fernald in Gray, Man. ed. 7: 201 (1908). *Phaeocephalum capillaceum* var. *levisetum* Farwell, Rep. Mich. Acad. Sci. xxi. 361 (1920).—Occasional in the range of the typical form in Newfoundland, Maine and the area of the Great Lakes. With the exception of the type, representative specimens of f. *leviseta* have been cited with those of the typical form. INDIANA: wet pine barrens, Pine Station, head of Lake Michigan, July 28, 1875, Hill (G, TYPE of var. *leviseta*).

Asa Gray, in reporting var. *leviseta* for Hill, mentions another possible variety of *R. capillacea*, characterized by 12 setae and a short "stipe" which had been collected in Herkimer County, New York by J. A. Paine, 1864. The sheet in the Gray Herbarium labeled Litchfield, Hidden Lake, Herkimer County, New York, John A. Paine, 1864, is mixed. The two specimens with achenes bearing as many as 12 bristles are poorly developed *R. alba* (L.) Vahl.

Series 2. PLUMOSAE (Clarke) Small, emend. Plants of damp or exsiccated pine barrens on the Coastal Plain, the West Indies and Central America. Caespitose: leaves filiform to 3 mm. wide: culms capillary to slender: inflorescence reduced to a few spikelets or 1-2 spiciform or corymbiform fascicles: spikelets usually 1- (rarely 2-3)-fruited, pedicellate to sessile: scales castaneous to pale brown, tightly imbricated: bristles heavily plumose in at least their lower portions; tips antrorsely serrulate; rarely reduced to 6 plumose tufts: achene rugulose to ridged, emarginate, usually rotundly obovoid: tubercle conical.—Man. 175 (1933). *Rhynchospora*, Series B. *Diplostyleae*, Sect. 2, *Plumosae* Clarke in Urban, Symb. Ant. ii. 105 (1900), in part. *Rhynchospora* § *Eriochaete* Gray in Torr. Ann. Lyc. N. Y. iii. 363 (1836); Steud. Cyp. 139 (1855).

KEY TO SPECIES IN SERIES PLUMOSAE

- Spikelets 1-5, remote on 1-2 slender branchlets, the lowermost of which is abruptly divergent. 10. *R. oligantha*.
 Spikelets numerous, congested in ovoid to spiciform fascicles.
 Fascicles ovoid to irregularly corymbose; achene 1.4-1.7 mm. wide, 2-2.2 mm. long; leaves 2-3 mm. wide. 11. *R. intermedia*.
 Fascicles spiciform; achene 1.1-1.4 mm. wide, 1.4-1.8 mm. long; leaves filiform to 1 mm. wide. 12. *R. plumosa*.

10. *R. OLIGANTHA* Gray. Densely caespitose: leaves filiform-setaceous, canaliculate, smooth, blunt-tipped, ascending: culms capillary, erect or often weak, leafless, 1.6-3.7 dm. tall: inflorescence reduced to 1-2 elongate capillary branchlets, the one erect and with 1-2-spikelets, the other abruptly divergent, with 1-3-

spikelets, subtended by a long filiform erect often circinate-tipped bract which appears as a continuation of the culm; rarely a single remote lateral spikelet present: spikelets ovate to lanceolate in outline, with 2–4 florets, 1–3-fruited, pale cinnamon-brown, 4–7 mm. long; scales ovate, sometimes mucronulate, tightly imbricate: bristles 6, partially plumose, slightly shorter than the achene to exceeding the tubercle or reduced to tufts: achene broadly elliptic or ovate, subterete, 1.6–2 mm. wide, 2–2.6 mm. long, horizontally rugulose with faint longitudinal striae: tubercle conical, 0.3–0.6 mm. in height.

10a. Var. **typica**. Bristles slightly shorter than the achene to exceeding the tubercle; the lower portion covered by dense, reddish, silvery-tipped hairs; the upper portion upwardly hispidulous: achene broadly elliptic, subterete, 1.6–2 mm. wide, 2.3–2.6 mm. long, occasionally having a trace of a bluish bloom over the castaneous to dark brown surface; the summit noticeably constricted under the wide basal flange of a conical-attenuate tubercle (0.4–0.6 mm. in height). PLATE 821, FIGS. 2A and 2B; MAP 15.—*R. oligantha* Gray, Ann. Lyc. N. Y. iii. 212, pl. 6, fig. 22 (1835); Chapman, Fl. So. U. S. 524 (1860), in part var. *brevisetata* Gale; Gray, Man. ed. 6: 585 (1890); Britton & Brown, Ill. Fl. i. 277, fig. 650 (1896); Britton, Man. 184 (1901), var. *brevisetata* as to specimens from Florida; Small, Fl. 194 (1903) and Man. 180 (1933); Robinson & Fernald in Gray, Man. ed. 7: 200, fig. 321 (1908).—Open bogs of the New Jersey Pine Barrens and Delaware; North Carolina, southern Georgia and westward along the coast to Mississippi and eastern Texas; also in Central America. NEW JERSEY: peaty savanna-bog along Mullica River southeast of Atsion, Burlington Co., Long, no. 50410 (G, P); open pine bogs, 2 miles southeast of Chatsworth, Burlington Co., Mackenzie, no. 6085 (D, G, NY). DELAWARE: in a sandy bog near Lewes, Sussex Co., Aug. 15, 1895, Commons (G, P). NORTH CAROLINA: Schweinitz (NY, TYPE); pine barrens, Fayetteville, Cumberland Co., Schweinitz, no. 7 (P; labeled "*Schoenus rariflorus* El."). GEORGIA: wet pine barrens, Sumter Co., Harper, no. 1027 (G, US); in moist pine barrens forming clumps of wire grass, Sylvester, Worth Co., Svenson, no. 7263 (G). FLORIDA: west Florida, Chapman (P). ALABAMA: about swamp, Elberta, Baldwin Co., Aug. 24, 1924, Wolf (StB); low sandy soil, Mobile, Mobile Co., May 1, 1940, Sargent (Sargent Herb.). TEXAS: swamps, Swan, Smith Co., Reverchon, no. 2919 (G, Mo, US); bogs, Hempstead, Waller Co., Hall, no. 715 (G, US); Drummond, no. 282 (G).

10b. Var. **brevisetata**, var. nov. Setis plerumque ad 6 cristas villorum argenteorum reductis; saepe 1–2 prolongatis apicem versus serrulatis achaenio duplo brevioribus: achaenio ovoideo 1.6 mm. lato 2 mm. longo, caeruleo-pruinoso; tuberculo breviter

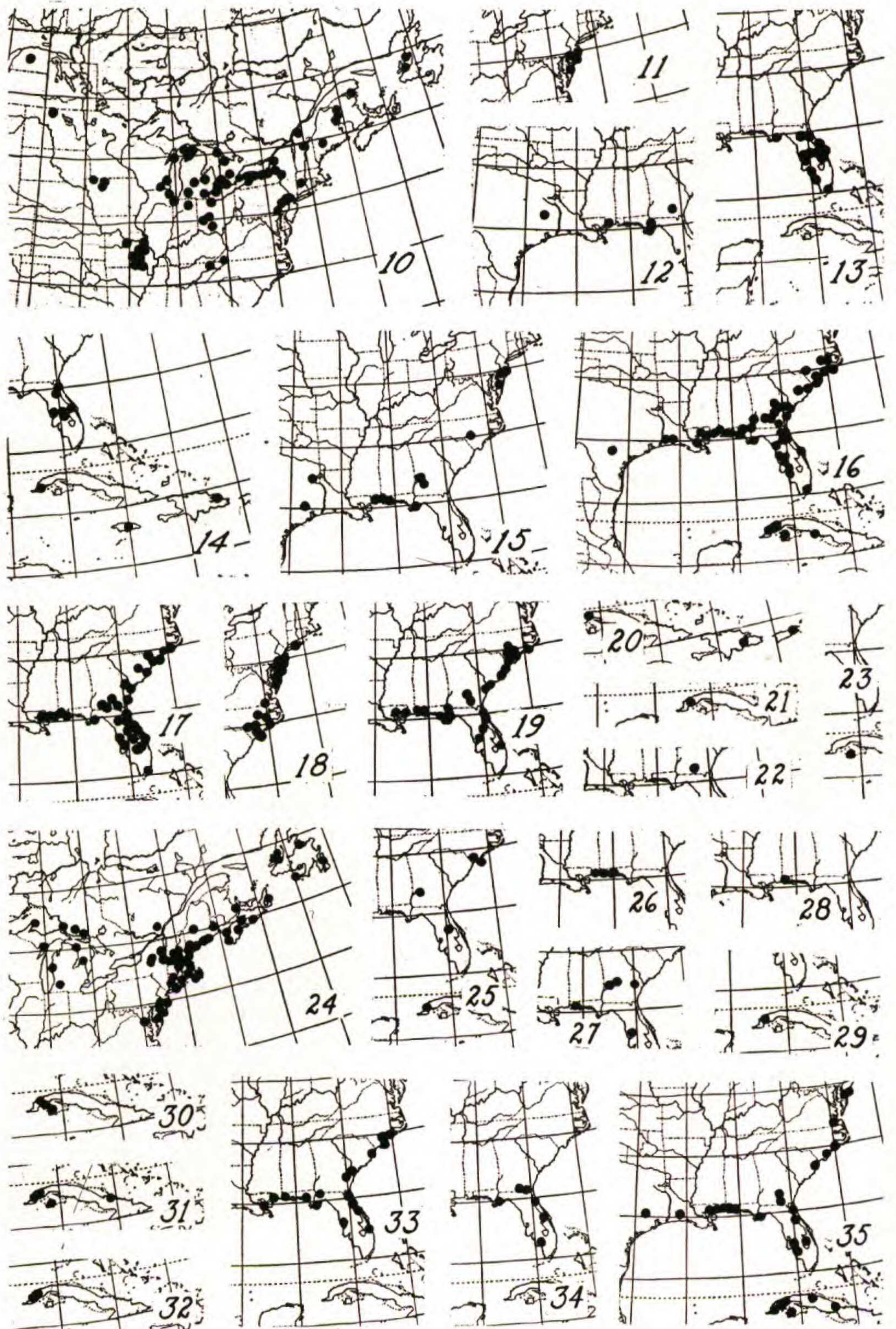
conico 0.3–0.4 mm. longo. PLATE 821, FIG. 2C; MAP 14.—*R. oligantha* sensu Kükenthal, Fedde Rep. Spec. Nov. xxiii. 207 (1926) and xxxii. 76 (1933); non Gray.—Low areas in pine barrens and savannas, Florida Peninsula, western Cuba, Jamaica and Hispaniola. FLORIDA: damp pine barren, Duval Co., *Fredholm*, no. 5179 (G); moist pine barrens near Jacksonville, Duval Co., June, *Curtiss*, no. 3165 (P, US); damp pine barrens near Jacksonville, Duval Co., June 19, 1896, *Curtiss*, no. 5687 (G, TYPE; NC, US, ISOTYPES); near Jacksonville, Duval Co., May 26, 1893, *Curtiss*, no. 4116 (US); low pine barrens, June, 1884, *Curtiss* (US); Winter Park, Orange Co., Apr. 1919, *Francis* (US); rather dry pine barrens about 1½ miles south of Starke, Bradford Co., May 13, 1909, *Harper*, no. 39 (US); cut-over flatwoods, west of Lake Reedy, Frostproof, Polk Co., May 7, 1931, *McFarlin*, no. 5138 (CU); Tampa, Hillsborough Co., May, 1876, *Garber* (G). CUBA: in slightly moist places (between Alcatraz Grande and Alc. Chico) at Laguna Restinga, Pinar del Rio, Nov. 18, 1923, *Ekman*, no. 18129 (NY, US); Laguna Restinga, between Palmarejo and Las Martinas, Pinar del Rio, Nov., 1923, *Ekman* (NY). HISPANIOLA: savanna in *Rhexia* association, not rare, El Valle, Sabana de la Mar, prov. de Samana, Cordillera Central, Santo Domingo, July 11, 1930, *Ekman*, no. 15652 (G, NY, US). JAMAICA: in small patches amongst shrubs and grasses, Hollis's Savanna, Upper Clarendon, alt. 2400 ft., Jan. 12, 1915, *Harris*, no. 12249 (NY, US).

11. *R. INTERMEDIA* (Chapm.) Britt. Caespitose: leaves canaliculate, carinate, 2–3 mm. wide, margins mostly upwardly serrulate: culms terete, erect, slender, 2.5–6.7 dm. tall: fascicles 1, rarely 2, congested, irregularly corymbiform or broadly ovate in outline, 0.9–2.2 cm. wide; the lateral fascicle when present smaller and remote: spikelets ovoid, compact, sessile, with 1–2 florets, 1- (rarely 2-) fruited, 4.5–5.5 mm. long: fertile scales acute, castaneous: bristles 6, equalling or overtopping the tubercle, covered with long ascending silky white hairs which are diminished at the top to stiff upward serrulations: achene rotundly obovoid, transversely ridged to rugulose, evenly browned, 1.4–1.7 mm. wide, 2–2.2 mm. long: tubercle conical-apiculate, depressed, 0.6 mm. high. PLATE 820, FIGS. 4A and 4B; MAP 13.—Trans. N. Y. Acad. Sci. xi. 87 (1892), non Beyrich; Small, Fl. 194, 1327 (1903) and Man. 180 (1933). *R. plumosa* var. *intermedia* Chapman, Fl. So. U. S. 524 (1860). *R. pineticola* Clarke, Kew Bull. Add. Ser. viii. 40 (1908). *Phaeocephalum intermedium* House, Am. Midland Nat. vi. 202 (1920). Dry sandy pine barrens, peninsula of Florida. FLORIDA: Hibernia, Clay Co., March, 1869, *Canby* (NY); Gainesville, Alachua Co., March, 1876, *Garber* (NY); dry pine barrens, Mosquito Inlet, Volusia Co., *Curtiss*, no. 3173 (CA, G, NC, NY, P, US); Lake Butler, Orange Co., *Beckwith*, no. 558 (US); Eustis, Lake

Co., Nash, no. 2020 (G, NY, P, US); dry pine barrens, Eau Gallie, Indian River, Brevard Co., Curtiss, no. 5703 (D, G, NY, US); hammock near St. Cloud, Osceola Co., Small, DeWinkler & Mosier, no. 11166 (NY); Tampa, Hillsborough Co., Britton & Wilson, no. 20 (NY); flatwoods, Lee Co., Hitchcock, no. 427 (G, NY, US); Palma Sola, Manatee Co., Tracy, no. 6998 (G, NY, US); Miami, Dade Co., June, 1877, Garber (G, P, US); dry sandy ridges near coast, Apalachicola, Franklin Co., Chapman in Biltmore Herb., no. 4481 (G, NY, US).

R. intermedia can be arbitrarily distinguished from *R. plumosa* on a basis of size. Its leaves are wider, the spikelets larger, and the achene 2–2.2 mm. long in contrast to 1.6–1.8 mm. long for that of *R. plumosa*. There is a pronounced tendency also for the fascicles of *R. intermedia* to be irregularly globose rather than elongated-spiciform.

12. *R. PLUMOSA* Ell. Caespitose: leaves filiform to 1 mm. wide, canaliculate, becoming subtriquetrous and scabrous toward the apex, ascending or sometimes arching: culms stiffly erect, slender, terete, usually overtopping the leaves, 2.1–7.2 dm. high: inflorescence composed of several small fascicles aggregated at the summit of the culm so as to produce the effect of a congested cylindrical spike, occasionally 3 cm. long, 1 cm. wide; a single remote lateral "spike" may also occur on a slender exerted peduncle: spikelets ovoid, tightly imbricate, with 1–3 florets, 1–2-fruited, 3–5 mm. long: scales obtuse to mucronulate, castaneous: bristles 6, falling short of the achene to exceeding the tubercle, thickly clothed with glistening white hairs which diminish more or less suddenly near the tip to antrorse serrulations: achene rotundly obovoid, transversely rugulose to ridged, evenly brown, 1.1–1.4 mm. wide, 1.4–1.8 mm. long: tubercle depressed, conical-apiculate or more rarely attenuate, sparingly serrulate. PLATE 820, FIGS. 2A and 2B; MAP 16.—Sk. Bot. S. Car. and Ga. i. 58 (1816); Gray, Ann. Lyc. N. Y. iii. 203, pl. 6, fig. 10 (1835); Chapman, Fl. So. U. S. 524 (1860); Clarke in Urban, Symb. Ant. ii. 123 (1900); Small, Fl. 194 (1903) and Man. 180 (1933); Britton, Mem. Soc. Cubana Hist. Nat. ii. 195 (1916). *R. semi-plumosa* Gray, Ann. Lyc. N. Y. iii. 213, pl. 6, fig. 23 (1835); Chapman, Fl. So. U. S. 524 (1860); Small, Fl. 194 (1903) and Man. 180 (1933). *R. pennisetata* Grisebach, Cat. Pl. Cub. 244 (1866); C. Wright in Sauvalle, Anal. Acad. Ci. Habana, viii. 84 (1871) and Fl. Cub. 180 (1873). *Schoenus ciliaris* sensu Muhlenberg, Descrip. Gram. ii (1817), non Michaux. *Phaeocephalum plumosum* House, Am. Midland Nat. vi. 202 (1920).—Open, sandy, dry to moist ground mostly in pine barrens of the Coastal Plain from North Carolina south to the tip of Florida, and west to Texas; also in the western provinces of Cuba, the Isle of Pines



Range of 10, *RHYNCHOSPORA CAPILLACEA*; 11, *R. KNIESKERNII*; 12, *R. MACRA*; 13, *R. INTERMEDIA*; 14, *R. OLIGANTHA*, var. *BREVISETA*; 15, *R. OLIGANTHA*, var. *TYPICA*; 16, *R. PLUMOSA*; 17, *R. CILIARIS*; 18, *R. PALLIDA*; 19, *R. CHAPMANII*; 20, *R. BRACHYCHAETA*; 21, *R. SOLA*; 22, *R. SOLITARIA*; 23, *R. NUDA*; 24, *R. FUSCA*; 25, *R. PLEIANTHA*; 26, *R. CURTISSII*; 27, *R. HARPERI*; 28, *R. CRINIPES*; 29, *R. FUSCOIDES*; 30, *R. LEPTORHYNCHA*; 31, *R. GAGERI*; 32, *R. JOVEROENSIS*; 33, *R. BALDWINII*; 34, *R. FERNALDII*; 35, *R. FILIFOLIA*